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RAILWAY AGE

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IN THIS ISSUE

EDITORIALS:

The Menace of Uncontrolled Labor Monopolies 31

Continuation Training 32

Diesel Locomotives and Smoke Prevention..... 32

Role of Leadership at Train Accidents 33

GENERAL NEWS 58

OPERATING REVENUES AND EXPENSES.. 76

CURRENT PUBLICATIONS 80

GENERAL ARTICLES:

Pennsylvania 6,000-Hp. Freight Diesels 34

Car-a-Minute Coal Dumper Dedicated 40

Freight Station Mechanization Helps Offset Trend of Rising Costs 42

Two Months' Buying Tops $470 Million 45

Power Networks for Passenger Trains 47

Alaska Railroad Spending $48 Million for Rehabilitation 50

Seek to Broaden the Benefits of Timber Treatment .. 52

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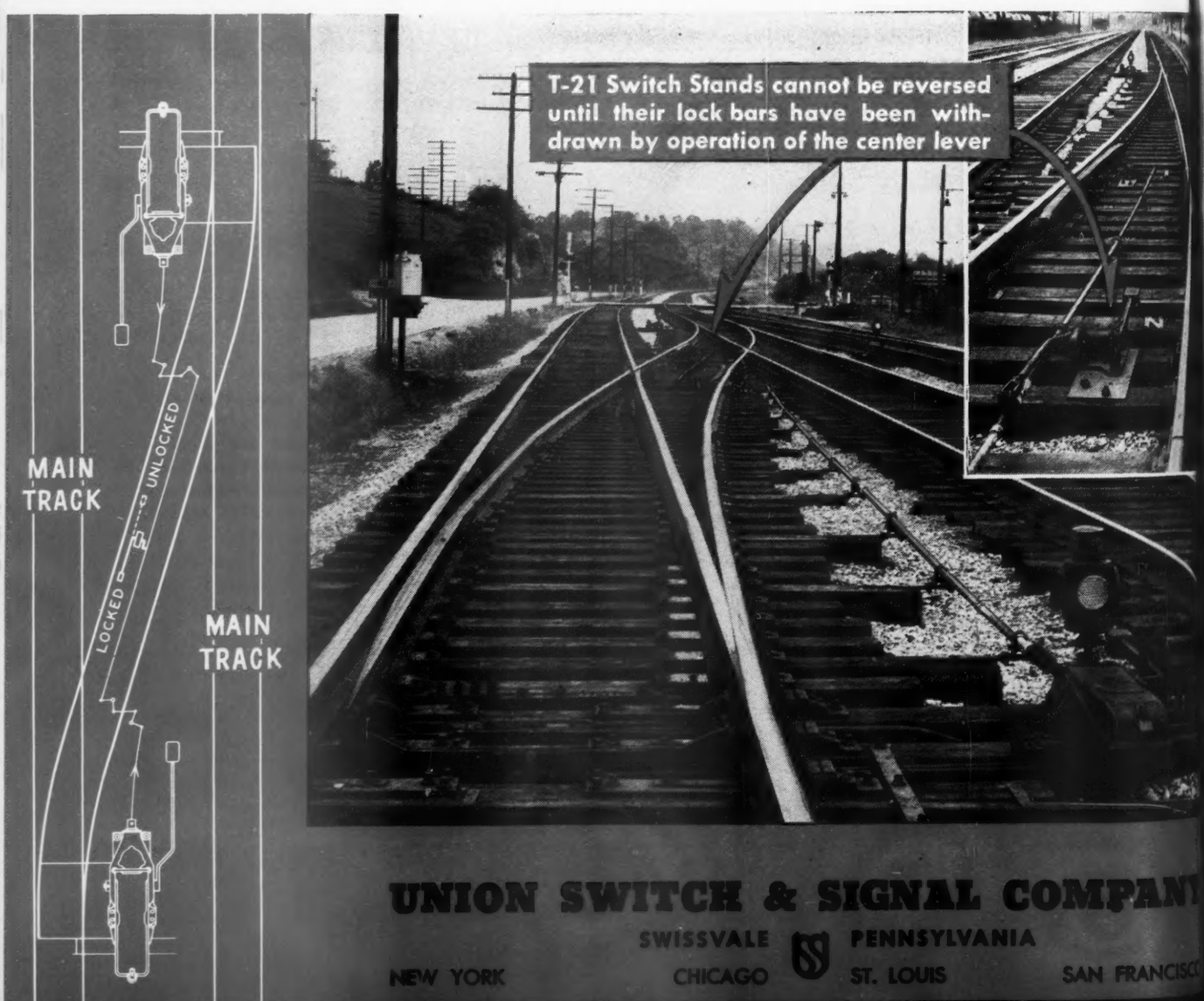
"UNION" Switch Stands

Here is another way "Union" T-20 and T-21 Switch Stands provide extra protection and safety at mainline, hand-operated switches . . .

The independent lock bars of the two T-21 Switch Stands are operated through the pipe line connection by a center-of-crossover lever. Thus, neither switch can be reversed until the independent lock bars have been withdrawn by reversing the center-of-crossover lever. And, since each switch stand in this particular arrangement is equipped with a lock rod having a normal notch only, both switches must be in their normal positions before the locking can be restored by the center-of-crossover lever.

Where electric locking is used, only one electric lock is required . . . installed on the normal position side of the center-of-crossover lever stand.


MAIN TRACK
UNLOCKED
LOCKED
MAIN TRACK
T-21 Switch Stands cannot be reversed until their lock bars have been withdrawn by operation of the center lever

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

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WEEK AT A GLANCE

TRUMAN'S TURN: Having gone through all the motions prescribed by the "model" Railway Labor Act for the disposition of the wage and rules-change "demands" of the brotherhoods, Davey Robertson and his right and left bowers appeared to be sitting on the end of a limb, as the week-end approached, looking for somebody to run up a ladder by which they could climb down more or less gracefully from their uncomfortable positions before they suffered a thorough singeing from the rising wrath of a public outraged by their strike threat. A summons to the White House, reported in our news pages, suggested that their expectations of intervention from that source were being realized, but they were still in suspense, it seemed, as to whether they would be the beneficiaries of another application of the Roosevelt technique of overriding his own appointees' recommendations—at the expense, of course, of the railroads. Grand Engineer Johnston may remember one occasion, however, *circa* 1946, when the outcome of obstinacy was slightly different.

BIG FAIRBANKS-MORSE DIESELS: A complete illustrated description of the Pennsylvania's new 6,000-hp. freight Diesels, built by Fairbanks, Morse and General Electric, appears on page 34. This powerful, high-speed locomotive is characterized by numerous developments of the arts of Diesel-engine design and mastery of electrical controls.

ACCELERATED SPENDING: Still affected by price advances, Class I roads' outlays for materials and supplies, inclusive of fuel but not of equipment, were 12 per cent greater in the first two months of this year than in the comparable 1947 period. Details are summed up in the article on page 45.

WOOD-PRESERVING DATA: The growth of the wood-preserving industry, the development of new processes and preservatives and the efforts being made to reduce the mechanical wear of crossties were some of the subjects discussed at length by A. J. Loom, president of the American Wood-Preservers' Association, at the organization's 44th annual meeting in St. Paul, Minn., April 27-29. A complete report of the meeting is given in the illustrated article on page 52.

FREIGHT-HANDLERS' WAGES OFFSET: One of a railroad's most costly operations, relative to revenues, is, of course, the handling of merchandise freight at transfers and freighthouses, and this cost has been mounting rapidly as wage rates have gone up. The Pennsylvania has demonstrated in a striking way, however, at its Polk Street station in Chicago, that this upward surge of costs can be offset by mechanization of freight-handling operations. The dollars-and-cents results are set forth in one of this issue's articles (page 42). Outbound freight goes through the station with a reduction of 58 cents per ton (almost 25 per cent) in handling costs, while on incoming traffic, where an additional operation is necessary, the saving is 85 cents a ton, or 14.1 per cent. Mechanization is a result of the use of fork-lift trucks, Chore Boys, pallets, Towmotors, Mercury electric tractors, skids and 4-wheel trucks.

WAUKESHA POWER PLANTS: Great flexibility in multiple-unit service, maximum economy in operation, and adequate capacity for all electrical demands—these features are among those emphasized in the illustrated description in this issue (page 47) of the new Waukesha a.c. Diesel engine-generator set for passenger cars. Perhaps even more advantageous, however, is the provision of means for hooking each set into the train line, forming a "network" so that the number of sets running at any time can be adjusted to the electrical load without affecting the freedom the arrangement affords—as contrasted to a head-end power car, for example—for setting out cars at any point without interrupting the operation of their electrical equipment.

CAR-A-MINUTE DUMPER: At Lorain, Ohio, the Baltimore & Ohio's new facilities for the transfer of coal to lake vessels are now in regular operation. One of our articles reports the ceremonies that marked the dedication of this $4 million contribution to better transportation service.

TOTALITARIANS, TOO: Italy had its fascists, Russia has its communists, and the United States has its labor monopoly bosses. Their power to interrupt transportation and vital utilities whenever they fail to get their way by less vigorous means is a power they employ recklessly, a power that the overwhelming public sentiment of the country is thoroughly fed up with, but a power that they can exercise legally almost without restraint. The fundamental principles of the American political and economic system cannot endure if such uncurbed labor monopolies are permitted to ride roughshod over the rights and the welfare of the whole public, our leading editorial points out. By the actions of the Lewises and Whitneys and Petrillos and Robertsons the public has been convinced that it needs protection from these monopolies. That protection can be secured. It may be obtained by destroying labor monopolies or by regulating and restraining them in the public interest. The choice of a way cannot be much longer delayed.

FREE SPENDING IN THE FAR NORTH: The taxpayers' railroad up in Alaska is getting a lot of long-deferred maintenance and betterment work out of the way, including laying of new rail, setting up additional terminal and yard facilities, and line leveling and widening. The whole undertaking, to be spread over a five-year period, is expected to cost $48 million in addition to war-surplus materials acquired at no cost to the railroad (page 50).

DOING A TIMETABLE JOB!

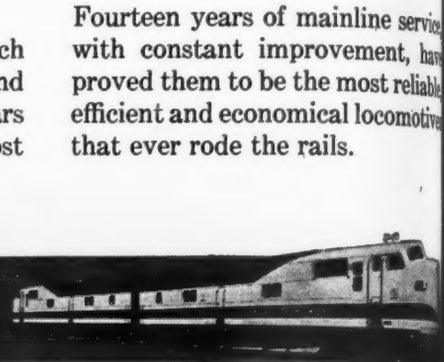
FIVE General Motors Diesel locomotives which are assigned to the proud job of hauling the new Empire Builders on the 1,784-mile Great Northern run between St. Paul and Seattle amassed a total of 2,902,502 miles between April 1945 and October 1947.

These 4000 H.P. locomotives met their assignments better than 98% of the time — maintaining high-speed schedules with plenty in reserve and with a remarkable on-time record through all kinds of weather.

It is evident that locomotives such as these don't just happen. Behind General Motors Diesels stand years of pioneering and research—the most complete and modern manufacturing facilities in the industry — and the experience gained in more than a billion unit miles of operation on the railroads.

Fourteen years of mainline service, with constant improvement, have proved them to be the most reliable, efficient and economical locomotive that ever rode the rails.

GM DIESEL PERFORMANCE RECORD ON THE GREAT NORTHERN



Loco. No:	Loco. Months Service	Total Miles Operated	Aver. Miles Operated Per Month	Percent Availability★
500	30	598,909	19,964	98.5
501	30	597,928	19,931	98.6
502	29	566,357	19,530	98.8
503	29	573,072	19,761	98.2
504	29	566,236	19,525	98.6
TOTAL	147	2,902,502	19,745	98.5

★*Availability determined on basis of hours worked to hours assigned.*

GM LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS LA GRANGE, ILL.
Home of the Diesel locomotive

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THE MENACE OF UNCONTROLLED LABOR MONOPOLIES

Labor leaders seem determined to make clear to the public the real weakness of both the Railway Labor Act and the Taft-Hartley Act. This weakness is that both of these laws tolerate the possession and use by labor unions of the *power of monopoly*. John L. Lewis could not have closed down all the coal mines if the United Mine Workers had not had a monopoly of coal mine labor. The leaders of the engineers', firemen's and switchmen's unions could not, as this was written, be threatening a nationwide paralysis of railway transportation if these unions did not have monopolies of the labor required to operate locomotives.

The laws of the nation assume that some industries are naturally competitive and some naturally monopolistic. The laws prohibit the former industries from forming monopolies or engaging in monopolistic practices. The laws prevent industries assumed to be naturally monopolistic, such as railroads and public utilities, from using the power of monopoly by subjecting them to strict government regulation of their service, rates, accounting, financing and other phases of their business.

Our laws formerly were as adverse to monopolies and monopoly practices by labor unions as in industries regarded as naturally competitive. About two decades ago Congress began passing amendments of the anti-trust law and other legislation legalizing and encouraging the creation of labor monopolies. The labor monopolies that have been created with this government permission and encouragement have been subjected to some government regulation by the Railway Labor Act and the Taft-Hartley Act. But the facts that the United Mine Workers have recently stopped production in all the coal mines, and that three labor unions can menace the nation with complete paralysis of railway transportation, show that neither the Railway Labor Act nor the Taft-Hartley Act has subjected the use of the power of monopoly by labor unions to any adequate restraints.

There is an overwhelming public sentiment for passage and enforcement of legislation to protect the public from the use and abuse of the power of labor monopolies. Some proposals have had the purpose of destroying labor monopolies. One of these proposals has been prohibition of nationwide collective bargaining and agreements, or even of such bargaining and agreements by a union with more than one company. This might do little good in the railway industry or most other industries. It would not prevent a union or unions allowed to retain a national monopoly of labor of one or more kinds from attacking and crushing one or a few railroads at a time until all railroads had been beaten down.

The real danger is in the existence of *uncon-*

trolled labor monopolies. The only way to remove this danger is either (1) to *abolish* the monopolies by adopting and enforcing prohibition of nationwide membership in unions or (2) to control the monopolies by prohibiting strikes that will cause territory-wide or nationwide shut-downs of vital industries.

It has been established by a long line of court decisions that Congress has just as much constitutional power, by appropriate legislation, to protect the public from labor monopolies as to protect it from business monopolies. During the recent years when they have had freedom to create and use the power of monopolies, the leaders of the labor unions have done about everything they could to convince the public of its need for protection from such monopolies. The only question remaining to be answered is whether the best means of public protection will be legislation (1) to destroy labor monopolies or (2) to subject them to regulation and control that will prevent abuse of their power.

The existence of private monopoly, whether of business or labor, subject to so little government control that it can exercise coercion by shutting down industries vitally necessary to the public welfare throughout large territories or the entire country, is as contrary to the spirit and principles of the American political and economic system as is fascism or communism, and plainly tends toward the substitution of some form of totalitarianism for our democratic government and free economy.

CONTINUATION TRAINING

While it is natural, in considering the training of employees, that efforts should be concentrated on those who are entering the service, wise leaders and supervisors realize that it is necessary to think in terms of training employees throughout their entire service life. The older, more experienced workers must be kept informed as to new and often radically different methods and practices necessitated by the introduction of new machines, equipment or devices.

If this is not done, the efficiency of the older employees tapers off and with younger, better trained, more aggressive youngsters following in their footsteps, they are likely to be sidetracked in the interests of efficiency.

There are various ways in which this so-called continuation training can be accomplished. More and more it is becoming recognized that an essential requirement of a successful supervisor is the ability to teach. Much of the training can and should be done on the job. For workers who are anxious to make good or to qualify for promotion, however, this is not enough. In some instances the men themselves are taking the initiative and of their own volition have enrolled in study courses in night schools.

The railroads have always promoted air brake instruction and this has been supplemented by special instruction in the use of fuel, the prevention of smoke, and other activities, either in classrooms or instruction cars equipped for the particular purpose. Now the need and demand for special instruction in Diesel locomotive maintenance and operation have become so pressing that instruction rooms are being fitted up and the number of Diesel study clubs or their equivalent is very much on the increase.

Younger men's clubs, in many instances fostered by the Railroad Y.M.C.A., are again beginning to be revived. The Minute-Men Club of the Boston & Maine, for instance, is made up of young men from all departments. It is the outgrowth of a Younger Railroad Men's Conference held in 1946. In the words of one of its leaders, "We determined to develop some medium through which we could encourage our aspirations for the future and develop ourselves for future responsibilities on our road."

The need for adequate training, not alone after entering into service, but throughout the service life, is becoming more clearly evident in this day of constant and rapid change. Many of the workers covet the opportunity to improve their knowledge and ability to meet these new challenges. In other words, the demand for such educational opportunities exists. The remarkable success of such experiments as the correspondence course in public relations on the New York Central is one evidence of this. The problem for management seems to be to find ways and means of helping to cooperate with the employees in such a way as to satisfy this need.

DIESEL LOCOMOTIVES AND SMOKE PREVENTION

According to press reports, a member of the Chicago City Council recently sponsored a proposal "to require railroads within the city limits to replace coal-burning equipment with Diesel power within some specified number of years" in the interest of smoke prevention. Presumably this ruling has reference to locomotives only, but there is nothing to prevent making it equally applicable to railway stationary power plants. The idea be-

hind this proposal, whether narrowly or broadly interpreted, is unquestionably aimed at a worthy objective, but that is about the only thing good that can be said for it.

In the first place, railroads probably make less than 20 per cent of the total smoke generated in any large industrial and residential area and concentrated effort to reduce the other 80 per cent will certainly produce greater returns than picking on the railroads alone. In other words, if Diesel power is the answer to the smoke problem in large cities why not make other industries and power producers, large and small, replace their coal-burning steam plants with electric motors or Diesel equipment?

The truth of the matter is that electrification is the only complete answer to the railway smoke problem and Diesel power represents but a partial solution, owing to the fact that Diesel engines for railway service are relatively high-speed reciprocating machines in which excessive wear of the cylinder liners, piston rings or leaky valves, if not corrected, prevent developing the compression required for complete combustion, so that particularly noxious black smoke results.

Another factor sometimes overlooked is that steam generators in Diesel locomotives are commonly oil fired and under adverse conditions emit objectionable smoke to such an extent that they sometimes have to be shut off before entering passenger terminals.

Railroads generally recognize the urgent desirability of reducing locomotive smoke to the lowest practicable minimum. Their major effort has, of course, been with steam locomotives because of the great preponderance of this type of power. With the use of better grades of coal, overfire airjets, improved firing practices and avoidance of sudden overloads it has been found possible to operate steam locomotives practically without objectionable smoke.

Proof of the improvement accomplished is afforded by the reduction in both the number of violations and density of smoke reported in some of the largest cities.

Railroads have also made marked reductions in the amount of locomotive smoke by installing large numbers of Diesel locomotives for both yard switching and road service, but smoke prevention was not the primary objective. The new type of power was installed because it is an efficient operating tool which permits railroads to provide more and better transportation service at less cost. For a municipality to require railroads to install Diesel locomotives where not economically justified, solely on the score of smoke prevention, will simply mean that some locomotives will be put to work where they cannot earn a satisfactory return on the investment and the loss will have to be made up from other railroad revenues.

ROLE OF LEADERSHIP AT TRAIN ACCIDENTS

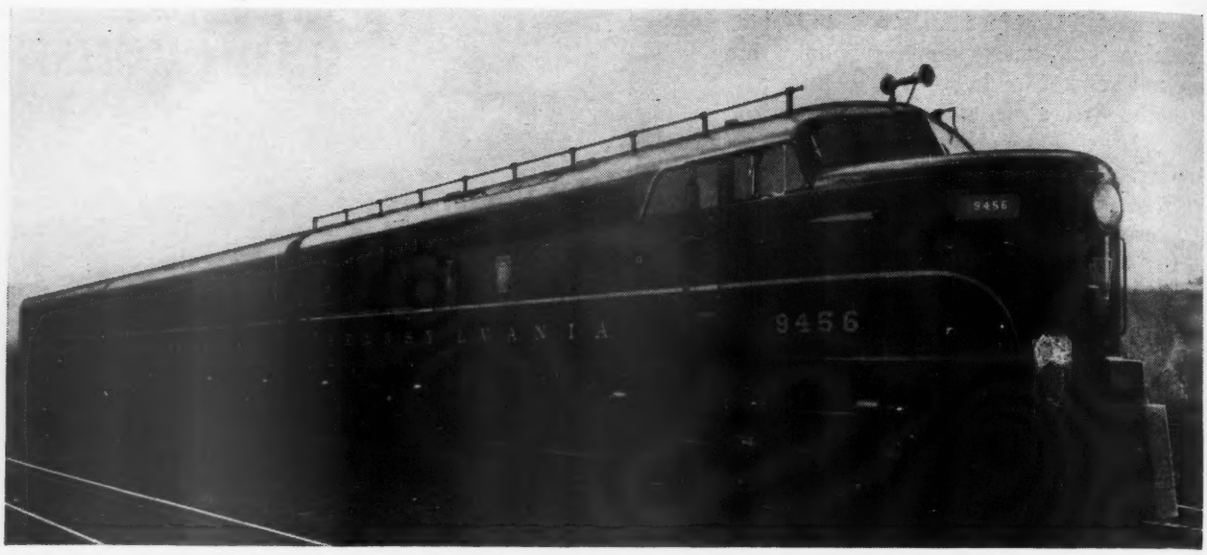
When train accidents are sufficiently serious to draw the attendance of top-level officers, their qualities of leadership are put to a severe test. Are they more likely to get the line clear and pick up the wreckage quickly by taking over the detailed direction of the job, or by cooperating with their subordinates who have more day-to-day familiarity with such work?

When these accidents happen, the track supervisor and the trainmaster, or other local representatives of the maintenance-of-way and operating departments, are usually the first supervisory personnel on the job. Theirs is the primary responsibility, in collaboration with the wreckmaster, to organize the work of clearing the line and repairing the tracks.

These men ought to know what must be done and how to do it—otherwise they would not hold the jobs they do. If they are qualified for their work, they will know how to appraise the situation and to determine what additional forces, material and equipment, if any, will be needed for the restoration work. They will know, further, how to organize the work to the best advantage, and, from their experience and first-hand knowledge of conditions, will probably be in a better position than anyone else to estimate the time required to get the line back into service.

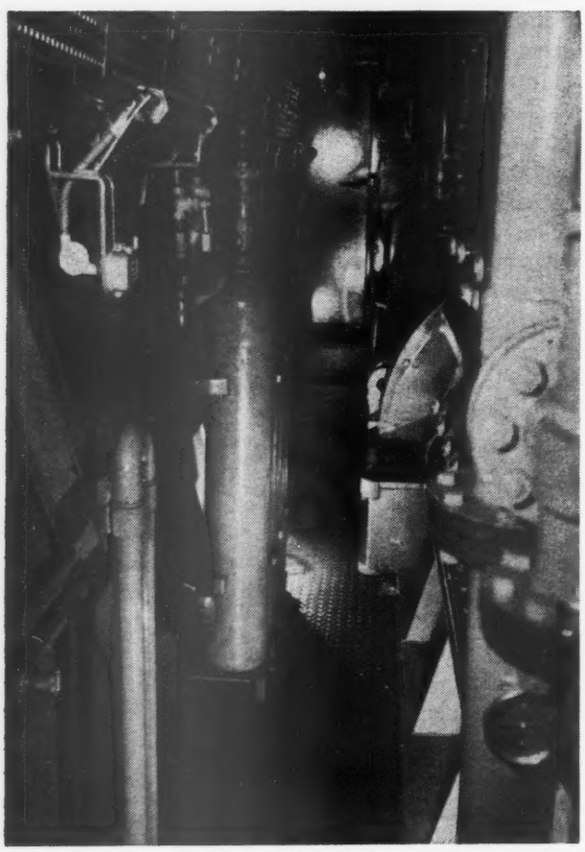
However, these early arrivals at the scene are not likely to have the field to themselves for long. Soon the higher officers begin to show up, their numbers and rank being largely in proportion to the seriousness of the damage incurred. Against such a background the qualities of true leadership will stand out in bold relief. The superintendent or general manager possessing these qualities will be careful to avoid hasty, ill-considered action. He will recognize the necessity of making a cool-headed appraisal of the situation before taking any steps that may disturb the progress of the restorative work that already has been set in motion. He will not forget that the subordinates directing the work, having been on hand from the beginning, are usually in a better position than he is to have the overall picture, and consequently he will be slow to revoke, without strong reasons, such action as they may have taken.

At best, the work of clearing and restoring the tracks after an accident is carried out under difficulties by men and supervisors who, due to fatigue and the knowledge that they are working against time, are apt to develop considerable nervous tension. In such an atmosphere peremptory action on the part of a newly arrived higher officer can do more harm than good—slowing up the work of restoration rather than expediting it.



PENNSYLVANIA 6,000-HP. FREIGHT DIESELS

Three-unit locomotives for fast freight service have top speed of 69 m.p.h. with 70:17 gear ratio—Powered with Fairbanks-Morse Diesel engines and General Electric electrical equipment



Engine room showing C-O-Two fire-fighting equipment installation

ncluded in the program for the installation of Diesel-electric motive power on the Pennsylvania are eight 6,000-hp. freight locomotives built by Fairbanks, Morse & Co., and powered with Fairbanks-Morse 2,000-hp. opposed-piston Diesel engines and General Electric generating, control and traction equipment. This group of freight locomotives consists of 16 A units and eight B units, each three-unit locomotive having a total weight in working order of 1,064,420 lb. Each unit is carried on two six-wheel trucks having two driving axles and one idling axle. The tractive force per locomotive is 221,000 lb. at 30 per cent adhesion. The locomotives have a gear ratio of 70:17 and are designed for a maximum speed of 69 m.p.h.

Location of Equipment

In the A units the operator's compartment occupies the forward end of the body. The operating cab is raised above the locomotive floor and the cab and nose of the locomotive are a welded structural shape built as a unit and welded to the body. Air brake equipment and sand boxes are located in the nose section. The control equipment is mounted in a panel box between the engine room and the operator's compartment. The engine compartment takes up the rest of the body unit with the power plant approximately in the center of the locomotive and radiators, oil coolers, air reservoirs, water tanks and sand boxes at the rear of the engine compartment. Motor-driven traction motor blowers are located at the front and rear of the engine compartment above the trucks. Motor-driven radiator

exhaust fans mounted in the roof at the rear of the engine compartment pull air in through louvers in the side of the body through the radiators and out through the roof. The louvers are automatically controlled. Battery boxes, fuel tanks and additional air reservoirs are suspended from the underframe between the trucks.

The location of equipment in B units is the same as in the A unit except that at the forward end of the unit the space ordinarily taken up by the operator's cab is occupied only by the hostler's control brake equipment and sand boxes.

Underframe and Body

The entire locomotive body unit construction is designed to the requirements of Association of American Railroads standards for new passenger car equipment. The underframe is a welded structure of steel plates and shapes and the center sills run the full length of the platform under the deck-plate. Flooring consists of steel plates welded to the underframe members upon which non-skid flooring is applied in the engine-room passageway areas. The cab sides are of truss construction and are welded to underframe cross members. The engine-room side walls are metal-sheathed plywood mounted on the outside of the cab side truss. Roof sheets are welded directly to the framing. Hatch covers in the roof simplify removal of equipment.

Diesel Engine

Each unit is powered by one Fairbanks-Morse vertical ten-cylinder, two-cycle, single-acting, opposed-piston type engine having a rating of 2,000 hp. at 850 r.p.m. for traction purposes. The cylinders are 8½-in. bore by 10-in. stroke with two pistons per cylinder. The pistons operate in water-jacketed cylinder liners having exhaust ports at the bottom and intake ports at the top. Scavenging is on the uniflow principle, there being no valves or heads.

This type engine has an upper and lower crank shaft designed to transmit the power produced in the cylinders through vertical drive gears and crank shaft couplings. A thrust bearing is used next to the vertical drive gears and plain main bearings are located at each transverse cylinder block member. The crank shafts are made of chrome-nickel-molybdenum cast iron with precision machined surfaces for main and connecting rod bearings.

At one end of the upper crank shaft is the drive for a positive-displacement type scavenging blower which furnishes air to the cylinders under a pressure of from three to six pounds per square inch. Scavenging air from the blower is contained in air reservoir compartments extending the entire width of the cylinder block and completely surrounding the cylinder liners at the air inlet ports.

The vertical shaft connecting the upper and lower crank shafts consists of upper and lower pinion shafts with a flexible coupling between them. The pinion shafts are mounted in roller bearings and supported by thrust bearings. The vertical shaft incorporates provision for timing the upper crank shaft with respect to the lower crank shaft.

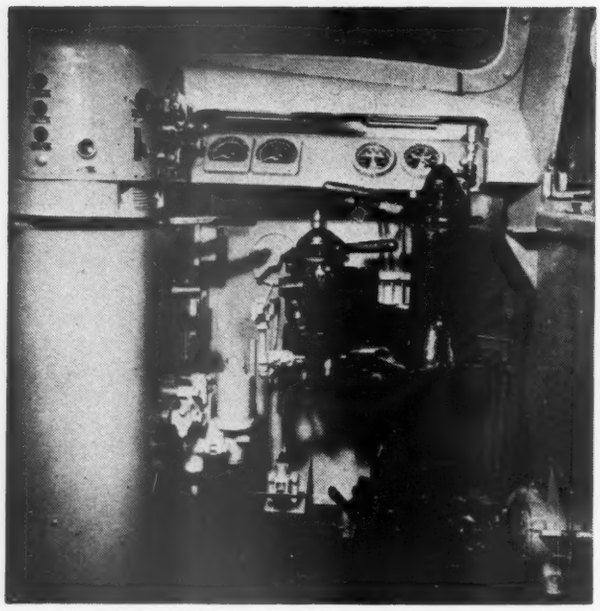
The pistons have three basic functions: (1) to act as movable gas- and compression-tight closures for the cylinder and to transmit power to the connecting rods and crank shafts; (2) to function as valves for the admission of scavenging air and the exhaust of combustion gases; and (3) to form combustion space between recessed heads as they approach dead center. The design of the upper and lower piston and rod assemblies are similar except that the lower connecting rod is longer than the upper one. Upper and lower pistons are identical with oil-cooled piston heads having a smooth cylindrical outer surface unbroken by any cross-bore for the piston pin. This is accomplished by the use of a piston insert into which the pin is fitted. This insert is secured to the piston head and shims are used to adjust the clearance between the two pistons.

The piston pin insert acts as an inner oil jacket wall. The oil is discharged from the piston into the crank case without additional piping. Each piston is fitted with compression and oil-control rings and both pistons are easily removed from the lower end of the cylinder through crank case openings. The connecting rods and bearing caps are drop forged and the rods are drilled lengthwise to transmit cooling oil and piston pin lubricant from the crank shaft pin. The piston pin bearing is a bronze-lined steel bushing pressed into the connecting rod end and the bearings at the crank shaft end are bronze-backed shells lined with bearing metal and assembled without shims.

The fuel supply system for the engine consists of a service tank, supply pump on the engine, strainers, filters and gages. The fuel supply pump is driven by a d.c. motor which also drives a 400-cycle alternator and governor oil pumps. This pump draws fuel from the service tank, delivers it through a waste-packed strainer-filter to a header in which a pressure of about 15 lb. per sq. in. is maintained. The injection pumps, two to each cylinder, are mounted vertically under a camshaft. They are of the constant stroke, single valve, rotating plunger type. Fuel is metered by a helix machined on the pump plunger and the relation of this helix to a port in the pump barrel. The angular position of the helix is changed by a rack and pinion connected to the governor. The injection nozzles are of the spring-loaded differential type with a built-in fuel filter. The nozzles are bolted to an adapter in the cylinder wall permitting easy removal. Each nozzle is connected to its injection pump by short pieces of high-pressure tubing all of equal length.

The engine is equipped with pressure lubrication and piston cooling. The lubrication system consists of a gear pump, two oil headers built into the cylinder block, an oil sump tank, a strainer, cooler, filters, thermometers and necessary piping. The lubricating oil pump is mounted on the control end of the engine and driven by the lower crank shaft. The pump draws oil from the sump below the engine and forces it successively through strainers and coolers, lower and upper headers then through supply pipes to main bearings, crank pin bearings, connecting rod passages, piston pin bearings and piston oil cooling jackets.

There are two separate cooling systems in connection with the engine, one for cooling the jacket water and one for cooling the lubricating oil. The jacket water is cooled by means of radiators and the lubricating oil system by means of heat exchangers which in turn are water cooled, the heat being dissipated in another set



Operating cab at engineman's position

of radiators. The circulation in each of these cooling systems is effected by separate centrifugal pumps driven directly from the engine. One of these pumps circulates water through the engine cylinder jackets and radiator system and the other circulates water through the heat exchangers and their radiator sysem. The engine radiators dissipate engine heat by air drawn into the engine compartment through thermostatically controlled louvers and out through the fan chambers in the roof.

Electrical Equipment

A General Electric shunt-wound commutating-pole type GT-567 generator is directly connected to the engine crankshaft through a flexible coupling of the multiple disk type. The commutator end has a spherical roller type anti-friction bearing which takes end thrusts of the armature.

The generator is self-ventilated by a fan at the coupling end. A discharge duct is provided to discharge heated air outside of the cab and a damper is located in the discharge duct to permit the recirculation of air through the engine room in cold weather.

Four General Electric d.c., series-wound, commutating pole, forced-ventilated type GE-746 traction motors are mounted on the driving axles. Motor armature bearings are of the anti-friction type.

One auxiliary generator, gear-driven from a shaft extension of the main generator, furnishes power for battery charging, controls and lighting. The voltage is regulated to maintain constant voltage over the full range of engine speeds.

A second gear-driven variable voltage auxiliary generator supplies power for the two radiator fan motors and two traction motor blowers.

A General Electric amplidyne exciter, gear-driven from the main generator shaft, provides controlled excitation to the main generator.

A ground relay protects the power circuit in case of a ground. Auxiliary circuit controls are of the magnetic type and operate independently of main power circuit. Wheel-slip relays function to indicate when the wheels on any unit slip.

A motor cutout switch permits cutting out any one motor. With any motor cut out, engine power is automatically reduced to maintain normal horsepower input per motor on the motors remaining in the circuit, thus permitting normal speed at reduced tractive force.

A 32-cell lead-acid type storage battery is located in a compartment below the underframe between the trucks. Cranking of the engine is accomplished by motoring the main generator through use of a starting winding energized by the storage battery.

Protective devices include two lubricating oil pressure switches which shut the engine down in the event that oil pressure is too low for operation in: (a) power notches *5* to *8;* (b) idling to power notch *4*. Two temperature switches are provided, one for engine jacket water and the other for lubricating oil which reduces engine loading and speed in the event of excessive temperatures.

Amplidyne Excitation System

Current for the excitation of the main generator field is supplied by an amplidyne exciter. The special feature of the amplidyne is extremely rapid response to changes in its own excitation. Field current of the amplidyne exciter is controlled by a static regulator which automatically regulates amplidyne, and hence main generator, excitation to provide optimum locomotive performance without exceeding the operating limitations of the electric apparatus.

The limitations which must be observed are maximum traction-generator load current and maximum traction-generator field current. Generator load current is limited to prevent overheating and excessive sparking and to provide controlled tractive force. Field current is limited to prevent overheating of the generator shunt field and to limit generator voltage.

The static regulator for the amplidyne exciter uses 400 cycle a.c. saturable-core reactors as control elements. Measures of generator load current and gen-

General Characteristics and Dimensions of Pennsylvania 6,000-Hp. Diesel-Electric Freight Locomotive

Horsepower: Net to traction motors	6,000
Weight (in working order), lb.:	
A unit	355,160
B unit	354,100
Total locomotive	1,064,420
Per driving axle (4 per unit), avg.	61,400
Per idle axle (2 per unit), avg.	54,600
Principal dimensions, ft.-in.:	
Width overall	10- 6½
Height overall	15- 3
Length inside coupler knuckles	64-10
Truck wheel base	15- 6
Total wheel base	51-11
Min. radius of curvature (loco. only), ft. (21 deg.)	275
Wheel diameter, in.	42
Tractive force, lb.:	
Continuous	123,000
At 30 per cent adhesion	221,000
Maximum permissible speed, m.p.h.	69
Speed at continuous rating, m.p.h.	15.5
Supplies (per cab unit)	
Fuel oil, gal.	1,650
Lubricating oil, gal.	360
Engine cooling water, gal.	490
Sand, cu. ft.	20

erator field current are compared to signals which determine generator line current and field current limits. Both the current measures and limit signals are fed in through d.c. bias windings on the saturable-core reactors. The 400-cycle power is used because it permits the use of relatively small reactors and provides for rapid response of control functions.

In addition to protecting the generator from too much armature current, the current limit also serves to control low-speed tractive force. On the first throttle notch, the current limit is reduced to allow just about enough current to move the locomotive. As the throttle handle is pulled back, the current limit is raised a little on each notch, permitting smooth starting of the train. Full generator current is allowed only at the highest notch.

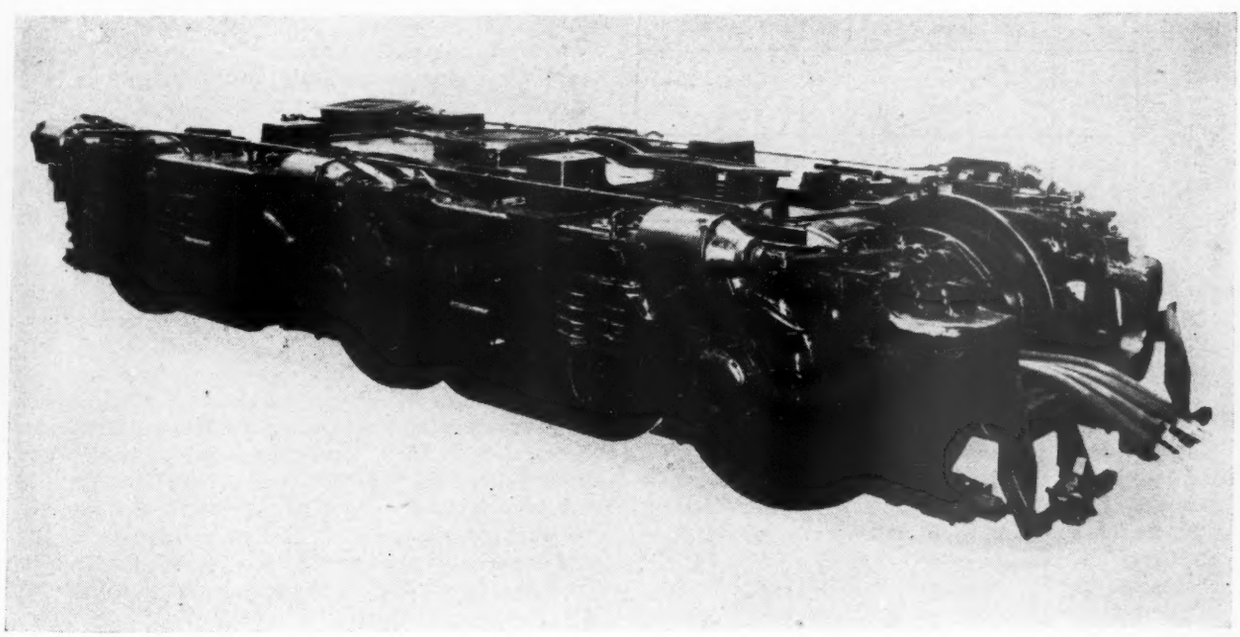
Locomotive Control

The locomotive control allows the operator to select any one of eight engine speeds, and functions automatically to load the engine to its capacity at each of these speeds and at all locomotive speeds within permissible limits of generator armature and field current. It also serves to control wheel slipping and provides for dynamic braking and automatic transition, forward from series-parallel to parallel motor connections and backward from parallel to series-parallel. The two major divisions of the control are a power plant regulating system, and an amplidyne excitation system for the main traction generator. Electric power for operating controls is obtained from the 64-volt control battery and a 400-cycle, 115-volt, motor-driven alternator. Hydraulic power for operation of the governor hydraulic cylinders is obtained from a motor-driven pump which supplies oil at 125 lb. per sq. in.

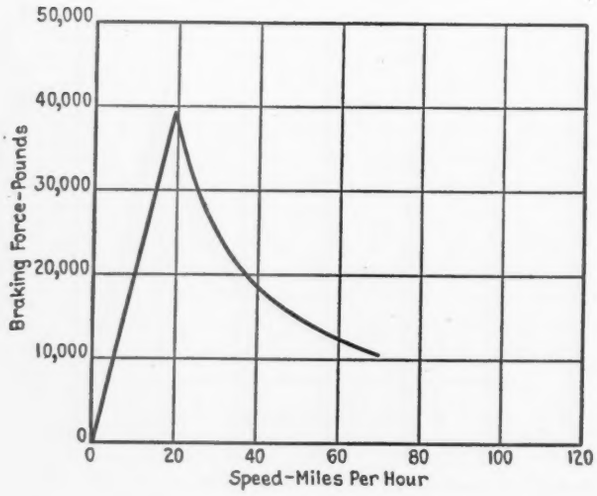
The power plant regulating system is a hydro-electric system making use of an electric speed measuring, speed setting and stabilizing system which controls a hydraulic servo-mechanism with sufficient power to operate the engine fuel racks. A small a.c. generator measures engine speed. The associated electric circuits

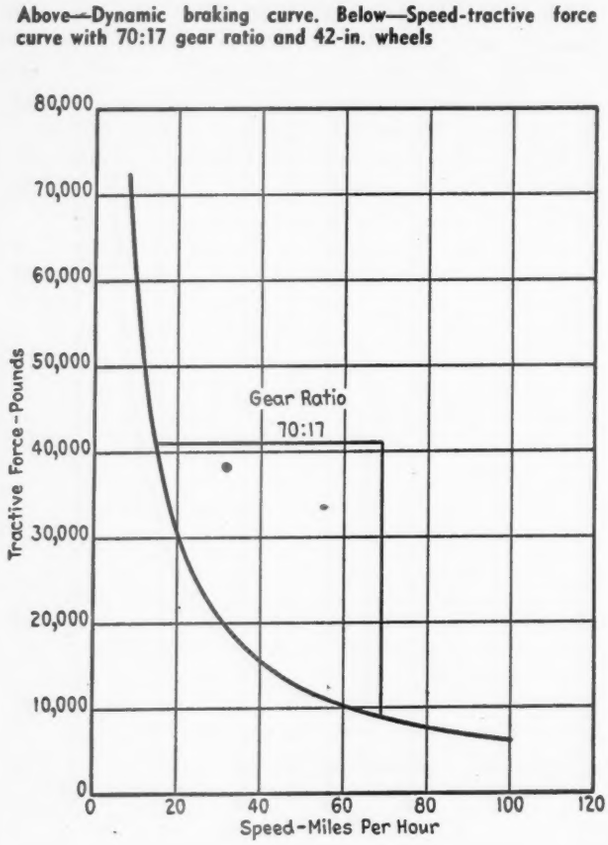
Partial List of Materials and Equipment on the Pennsylvania 6,000-Hp. Diesel-Electric Freight Locomotive

Back-up light	Electric Service Co., Cincinnati, Ohio
Batteries	Gould Storage Battery Corp., Depew, N. Y.
Brake, hand	National Brake Co., New York
Brake shoes	American Brake Shoe Co., New York
Brakes, air, air compressors	Westinghouse Air Brake Co., Wilmerding, Pa.
Cab signal	Union Switch & Signal Co., Swissvale, Pa.
Cooler, lubricating oil	Ross Heater & Manufacturing Co., Buffalo, N. Y.
Couplers, draft gear	National Malleable & Steel Castings Co., Cleveland, Ohio
Coupling, flexible	Falk Corporation, Milwaukee, Wis.
Electrical equip., fans and blowers	General Electric Co., Schenectady, N. Y.
Engine, Diesel	Fairbanks, Morse & Co., Chicago
Filter, air	Farr Co., Los Angeles, Calif.
Filter, fuel	Purolator Products, Inc., Newark, N. J.
Filter, lubricating oil	Michiana Products Corp., Michigan City, Ind.
Fire extinguishing system	C-O-Two Fire Equip. Co., Newark, N. J.
Gages, pressure	U. S. Gauge Div. of American Machine & Metals, Inc.
Headlight	Pyle-National Co., Chicago
Heaters, cab	Kysor Heater Co., Cadillac, Mich.
Horns, air	Leslie Co., Lyndhurst, N. J.
Insulation (cab roof and sides)	Gustin-Bacon Mfg. Co., Kansas City, Mo.
Muffler, engine exhaust	Burgess-Manning Co., Chicago
Paint	E. I. du Pont de Nemours & Co., Wilmington, Del.
Power plant regulator	General Electric Co., Schenectady, N. Y.
Radiators (2) (22)	Yates-American Machinery Co., Beloit, Wis. Perfex Mfg. Co., Milwaukee, Wis.
Riggings, brake	Westinghouse Air Brake Co., American Brake Div., Wilmerding, Pa.
Sanders	Prime Manufacturing Co., Milwaukee, Wis.
Shutter operating mechanism	Fairbanks, Morse & Co., Chicago
Speedometer	General Electric Co., Schenectady, N. Y.
Stand-by heater	Vapor Car Heating Co., Chicago
Train phone	Union Switch & Signal Co., Swissvale, Pa.
Trucks	General Steel Castings Corp., Eddystone, Pa.



Commonwealth six-wheel cast-steel truck





Above—Dynamic braking curve. Below—Speed-tractive force curve with 70:17 gear ratio and 42-in. wheels

compare this speed signal with the speed setting of the system and operate a "pilot" control valve in the hydraulic servo-mechanism which in turn operates the engine fuel racks through motion of the slave power piston. In order to simplify multiple-unit operation, the position of the master controller (throttle handle position) is translated to all engine controls by four train wires and four speed setting control relays at each engine.

Engine speed is regulated by either fuel or load adjustment. Regulation is accomplished by adjusting the fuel flow up to the "fuel limit" for the engine speed. (The system includes a variable fuel limit which automatically adjusts to the maximum permissible fuel rate for optimum engine performance and life at any given speed setting.) For all operating conditions where the separately excited traction generator tends to load the engine beyond the power available at the present speed and "fuel limit," the governing system controls the generator excitation to match the generator demand to the engine ability. (A control rheostat operated by the hydro-electric servo-mechanism controls the amplidyne exciter to regulate load demand.)

Dynamic Braking

For electric braking, the motor armatures are disconnected from the generator and are connected across braking resistors. The motor fields are connected in series and separately excited from the main generator. The motors act as generators, taking power from the drivers and converting it into electrical energy which is dissipated by the braking resistors in the form of heat.

The amount of braking is controlled by the operator by means of a braking potentiometer which is connected across the locomotive battery and operated by the controller selector handle. The generator current limit regulates the motor field current (generator output). The setting of the current limit is determined by the voltage between the potentiometer brush arm and one end of the potentiometer. Its brush arm is connected to a train line to set the same current limit in trailing units when running two or more units in multiple. The current limit holds low motor field current when the train line voltage is low and raises the motor field current when the train line voltage is raised.

The current limit circuit is rearranged for braking by means of a braking relay. The rearrangement is necessary because of the extreme range required—from zero to full motor field current—and to obtain sufficient accuracy of control to assure the same braking on all units over the full range of motor field current.

Some older types of locomotives were equipped with voltage biased relays for automatically transferring from series to parallel motor connections. These relays were not suited to handle backward transitions from parallel to series. It was up to the operator to retard the throttle handle and to drop the relay back to the lower connection.

Other locomotives depended solely on manual operation of the selector handle for initiating the transitions. Results were satisfactory as long as the operator moved the handle at the correct locomotive speed. When he erred, the results in terms of shock to the train, and in the electric equipment, were most undesirable.

To provide for smooth automatic transition, both forward and backward, the locomotive is equipped with an axle generator developed to operate tuned frequency equipments. It has a permanent magnet, 14-pole rotor, with a three-phase Y-connected stator and is rated 50 volt-amperes for speeds from 15 to 120 m.p.h., with wheels from 36 to 42 in. in diameter.

For the purpose of transition, a combination of reactors and capacitors, tuned to peak sharply at the desired speed, and to maintain approximately the maximum output for frequencies above the peak value, operate a low energy relay through a rectifier. The

sharpness of the curve is such that the pick-up and drop-out of the relay are within five per cent in terms of locomotive speed. This means that transitions from series-parallel to parallel can be set for 33 m.p.h. and the reverse at 31.5 m.p.h. The low energy relay action is relayed to the locomotive control circuits.

Fire Extinguishing System

On one side of each unit are installed a group of four 50-lb. capacity C-O-Two cylinders arranged to operate two cylinders at a time. The cylinders are connected to a common pipe leading to four hose stations. In the A units one hose station is located in the engine compartment on each side, adjacent to the doors leading to the cab, one station is located adjacent to the left side door and one is located at the rear door. The location of the equipment in the B unit is similar to that in the A unit.

The four cylinders are cross-connected so that one group acts as a reserve for the other. In addition, the systems in each locomotive unit are connected by means of a flexible connection so that the total capacity of each unit acts as a reserve for the other.

At each hose station two remote-control pull boxes are mounted, one on the inside of the unit and one on the outside near the sill so that it can be reached from the ground. The handles in the pull boxes are connected by means of flexible steel cable run in conduit to the control heads on the cylinders. The pull cables are arranged so that any two cylinders can be released from either side of the locomotive, thus eliminating the necessity for the crew to run from one side to the other in order to obtain additional carbon dioxide.

At each hose station, a normally closed quick acting direction valve is installed in the piping ahead of the flexible hose. The valve must be opened before the hose is used on a fire. Its purpose is to prevent loss of gas if the system were used while one or more of the hoses happened to be temporarily removed.

A header safety relief is installed between the valve and the flexible hose. It consists of a ½-in. plug in which are located a safety disk washer, safety disk and retainer nut. The safety disk ruptures at a pressure of approximately 2,900 lb. per sq. in. Its purpose is to relieve excessive pressure so that the hose will not rupture. This could occur if the system was not completely exhausted before the valve on the discharge horn and the direction valve were closed.

Plastic "sylph-seals" are placed over the safety disk nuts at the base of the cylinder valves and on the header safety reliefs. This provides a visible means of checking if the safety disks have been ruptured.

A squeeze-grip valve is provided on the discharge horn for controlling the flow of carbon dioxide while working around a fire.

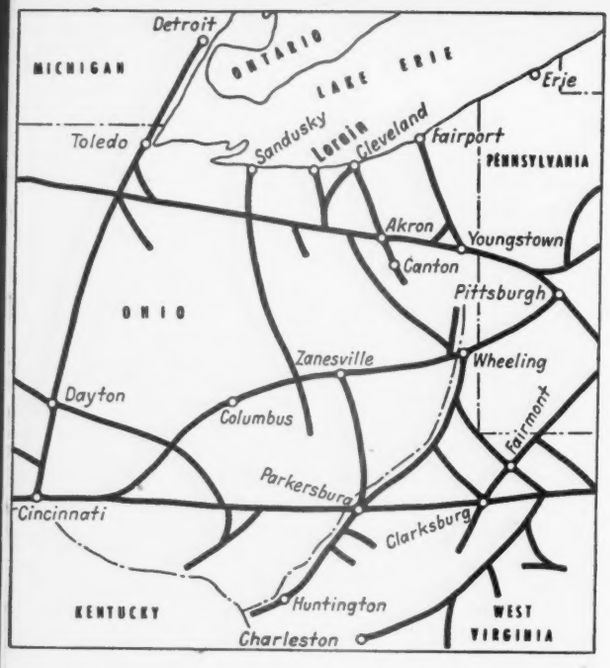
Electric thermostats are mounted over each Diesel engine and in each electrical cabinet. The thermostats are connected in parallel and then to a relay.

A red warning light is mounted on the dash in the cab. This, together with a bell, is operated by the relay which is energized by one or more of the thermostats when an excess temperature such as a fire occurs. When the temperature has dropped back to normal, the thermostats will reset and stop the alarm condition.

Each locomotive unit has two six-wheel equalized

swing-motion motor trucks having one-piece cast steel frames and bolsters furnished by the General Steel Castings Corporation. Each truck has two motors carried on the end axles, the center axle being an idler. The axle-supported motors have spring nose suspension from the truck transoms. The axles are mounted in roller bearings and above each journal box there is a rubber centering device on which the equalizer ends are supported. Lateral movement is taken through this centering device and through the rubber cushion pedestal liners attached to the integral pedestals of the truck frame. By this arrangement road shocks are cushioned and the truck passes through curves more readily. The rubber cushioned liners have hardened spring steel wearing plates. The truck frames are spring-supported on two equalizers at each side with a double nest of coil springs between the frame and each equalizer. The spring planks are carried on swing hangers suspended from the truck frame. The spring planks carry four double elliptic springs which support the swing bolster at its four corners. Side bearings are used at each of the four corners of the swing bolster. The truck is fitted with clasp brakes on all wheels and the brakes on each pair of wheels are actuated by individual brake cylinders, arranged to provide approximately 75 per cent braking power at 50 lb. cylinder pressure.

The locomotive brake schedule is 24-RL straight and automatic air brake equipment having provision for braking the unit individually or in conjunction with other units or the trailing train. Air for the locomotive brakes is supplied by a two-stage air-cooled Westinghouse compressor having two low pressure and one high pressure cylinders. The compressors, designed in operation at 140 lb. pressure, have a displacement of 262 cu. ft. per min. at 850 r.p.m. An unloader governor in conjunction with an electrical train line synchronizes the compressors in multiple unit operation.



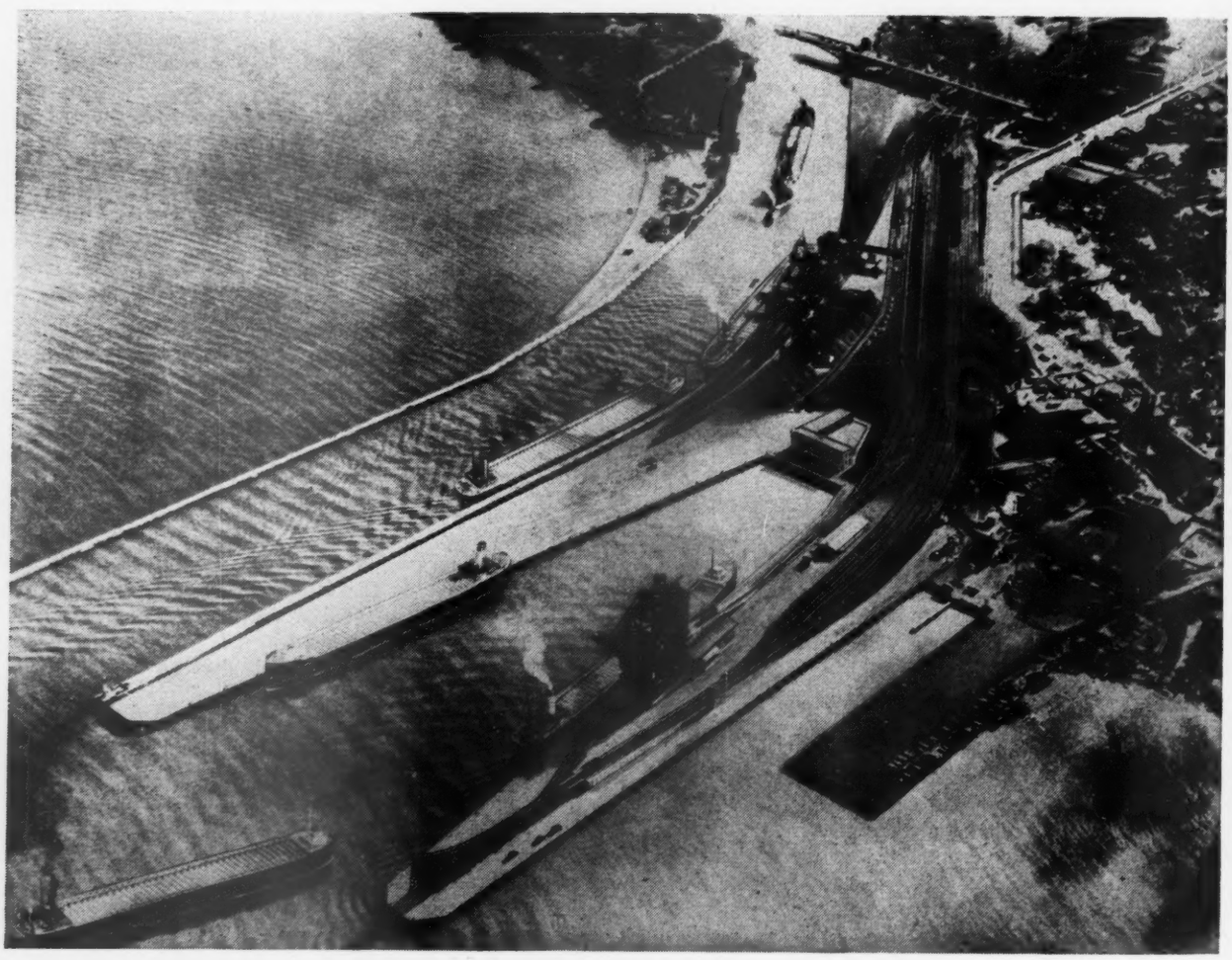
Lorain is strategically located on Lake Erie for the transshipment of West Virginia and Ohio coal to other ports on the Great Lakes

CAR-A-MINUTE COAL DUMP

New $4 million rail-lake coal facilities of the Baltimore & Ohio at Lorain, Ohio, are hailed by civic and industrial leaders

The Baltimore & Ohio's new $4 million coal facilities at Lorain, Ohio, were formally opened at an expressive ceremony on April 28. President Roy B. White of the B.&O., addressing more than 500 guests—many of whom came by special train from Cleveland—declared that the facilities were "lasting evidence of our abiding faith and strong belief in the coal industry." He also described the new coal dock as a monument to "faith in the future of the port of Lorain" and "the future of the Baltimore & Ohio."

Col. J. Monroe Johnson, director of the Office of Defense Transportation, made the principal dedicatory



Air view of B. & O.'s Lorain facilities, showing new coal dumper in foreground, with maintenance shop, administration building and older ore-unloading machinery in the background

DUMPER DEDICATED

address, praising the B.&O. for its contribution to the nation's efficient rail transportation system. Col. Johnson—referring to war clouds on the horizon—stated that "if America is called upon to do again what it has been called upon to do twice in our day, the railroads will be ready to do their part."

George H. Love, president of the Pittsburgh-Consolidation Coal Company, predicted that coal, as the nation's need for energy is increased, would play a bigger part in the future national economy than it has played in the last 20 years. Mr. Love told those assembled, representing the coal, steel and railroad industries, that the miners are sharing in the coal industry's upsurge, that they are the best paid workers in their class, and that they have an obligation to stay on their jobs. Further wage increases are likely to endanger the coal industry by outpricing, he said, and the miners should not use their present high wages to carry them over periods of voluntary idleness in the effort to seek still higher wages. Mr. Love stated that the coal industry has spent many millions in improvements and that he was happy to see that the railroads are spending to improve their facilities for handling the coal traffic.

Patrick J. Flaherty, mayor of Lorain, welcomed the new B.&O. facilities to Lorain. Mrs. Heath S. Clark, wife of the president of the Rochester & Pittsburgh Coal Co., acting as sponsor, started the car-a-minute dumper in operation by the throw of a remote-control switch.

The new car dumper (described in detail in *Railway Age* of January 31) was built by Heyl & Patterson, Inc., Pittsburgh, Pa. It is of the lift-and-turnover type and can handle a 70-ton hopper car every 60 seconds. Cars are pushed from the yard to the dumper lead track by electric locomotives operating on narrow-gage tracks. Barneys, operating in a pit between the rail, push the cars up the incline, one at a time, to the dumper cradle. After a car has been elevated, the contents dumped and washed and the car lowered, the next loaded car moving to the cradle pushes the empty car down to a gravity kick-back, from which it is directed to the proper yard track by retarders and electric switches controlled from an operator's tower on the pier.

The majority of coal transshipped at Lorain is from Northern West Virginia and Eastern Ohio origins. Principal destinations for the coal are American ports on Lake Superior, Canadian ports on Lake Huron and Georgia Bay, and ports on Lake St. Clair river and the Detroit river, ranking in importance in the order listed. During 1947, Lorain ranked fifth among Lake Erie ports in the volume of cargo transshipped—the total tonnage being just short of 3 million tons.

It is anticipated that the new facilities will increase the importance of Lorain as a transshipping port. Because the new dock is located at the lakefront, whereas the dumper formerly in service was loaded 1½ mi. upstream on the Black river, the actual round-trip transit time of vessels is reduced by approximately 3 hrs. Toal turn-around time is further reduced by the car-a-minute capacity of the new dumper, double that of the former equipment.

The chief advantage accruing to the Baltimore & Ohio is through its ability to handle increased volume through the port and by the enhancement of its competitive position through the thoroughly modern facilities. In addition, the carefully planned layout of the yards at the new facility permits the free movement of traffic with a minimum amount of switching.

Loaded cars are delivered to the foot of the incline by narrow-gage, third-rail electric locomotives, then raised to the cradle by a barney which emerges from the pit. An operator in the tower controls a retarder and electric switches which govern the movement of the empty cars when they return from the kick-back by gravity

Among those participating in the formal opening ceremonies were, left to right, Mrs. Heath S. Clark, who acted as sponsor for the new facility; George H. Love, president of the Pittsburgh Consolidation Coal Company; H. H. Simpson, vice-president in charge of traffic of the B. & O.; Roy B. White, president of the B. & O.; Heath S. Clark, president of the Rochester & Pittsburgh Coal Co.; and Mayor Patrick J. Flaherty of Lorain.

Inbound merchandise, loaded on pallets according to city destination, is elevated to the street-level platform and kept on the pallets until ready for loading into delivery trucks

FREIGHT STATION MECHANIZATION HELPS OFFSET TREND OF RISING COSTS

Motorized handling equipment and palletization effect major economies at Pennsylvania's Polk Street station in Chicago

Mechanization of freight handling at the Pennsylvania's Polk Street freight station in Chicago has made possible a substantial reduction in costs, easing materially the impact of wage increases and other growing expenses. Savings amounting to 85 cents a ton on inbound freight and 58 cents a ton on outbound freight were indicated in comparative checks made before and after the almost complete mechanization of operations.

Station Covers 7½ Acres

Polk Street serves as an inbound, outbound, and transfer station for all l.c.l. freight destined to and from points within the Chicago switching district, as well as Gary, Ind., and for overhead freight routed to or from connections at Chicago. The station structure covers 7½ acres of land, measures 745 ft. by 420

EQUIPMENT WHICH MECHANIZED THE PENNSYLVANIA'S CHICAGO FREIGHT STATION, CUTTING HANDLING COSTS BY AS MUCH AS 25 PER CENT

50 Buda Chore Boys
14 2,000-lb. Towmotor fork-lift trucks
1 4,000-lb. Clark fork-lift truck
2 6,000-lb. Clark fork-lift trucks
11 Mercury electric tractors
2 Elwell-Parker electric tractors
63 Colson skids
1,195 4-wheel trucks
5,000 double-face pallets

Outbound freight is loaded on Chore Boys at the tailgates of the delivery trucks and moved direct to the outbound cars

Chore Boys carry their loads inside the freight cars where the driver assists the stowers in unloading

ft., and consists of a track level below the street surface, a street level, and two upper floors containing offices and warehouse space. Some of the track and street level space is used by the Railway Express Agency, and the Western Warehousing Company occupies most of the storage space in the upper floors. The Pennsylvania, in its l.c.l. operation, uses 12 house tracks with a total capacity of 240 cars, which are served by 130,216 sq. ft. of platform area.

A special handling problem results from the depressed track level, which necessitates lifting inbound freight to the street level by means of 23 elevators of 3- to 10-ton capacity. Almost complete mechanization of the entire operation has been made possible by the use of fifty 1,000-lb. capacity Chore Boys, 17 fork trucks, including one of 4,000-lb. and two of 6,000-lb. capacity, 13 electric tractors, 1,195 4-wheel trucks, 63 skids, and 5,000 double-face, hardwood pallets. Sixteen of the fork trucks were acquired on May 1, 1947, and completed the means for full mechanical handling.

"Before and After" Picture

Prior to the mechanization and palletization, the following practices prevailed in the handling of inbound freight: When a car was spotted and the tallyman (checker) had its bills—routed according to city delivery destination or transfer car spot by a routing clerk—the gang assigned to the car commenced unloading its contents onto 4-wheel trucks according to destination zone numbers. The 4-wheelers were then moved in tractor-trains to the platform elevators. After elevation to the street level, the 4-wheel trucks were towed to the different city destination sections, where the freight was unloaded by hand onto the platform. The 4-wheelers were then released and moved back to the track level for more freight. When the delivery trailers were ready for loading, the freight was again loaded on 4-wheel trucks, towed into the trailer bodies, and unloaded manually.

With full mechanization, arriving freight is loaded on pallets which are carried on the 4-wheel trucks. The trucks are then handled in tractor trains, as before, to the street level. On arrival at the city destination section, fork-lift trucks transfer the whole load on the pallets, intact, from the 4-wheel trucks to the platform. When the pick-up and delivery trailers are ready for loading, the whole palletized load is moved by fork-lift trucks right into the trailer body, then unloaded by hand. Thus, at least two hand operations are eliminated in the handling of each inbound shipment, and, because a number of shipments are loaded on a single pallet, the handling of many individual pieces is avoided. Further, the palletizing has permitted higher stacking of freight, conserving considerable platform space, increasing the capacity per square foot, and allowing greater aisle space for expeditious handling of other freight through the area. By keeping multi-piece shipments on the same pallet, over-and-shorts have been greatly reduced. Approximately 80 per cent of the total inbound freight is adaptable to pallet handling.

Chore Boys have practically eliminated manual handling of freight in the outbound operation. A low-level driveway permits highway trucks with outbound freight to back against a receiving platform 47 ft. wide and 600 ft. long. Ordinary freight is transferred from the trucks direct to the outbound cars—which are spotted on six tracks served by the receiving platform and three island platforms—by the Chore Boys. Bulky shipments are moved by fork-lift trucks direct to the cars, while shipments such as pipe or steel plate are loaded from the trucks or trailers onto 4-wheel trucks by an overhead electric crane which extends over the driveway. These trucks are towed to the cars by electric tractors. Transfer freight is handled direct from car to car on 4-wheel trucks towed in trains by the electric tractors.

Cost Study Shows Worth

A comprehensive cost study of the inbound operation at Polk Street was made comparing results in August, 1947, a period after mechanization, with August, 1946, which was prior to mechanization. These two periods were especially valuable for comparative purposes since the same wage scale prevailed at both times. In compiling this study it was necessary to take two operations into consideration—the handling of inbound freight at the track-level dock, and the handling of freight at the street-level dock. With the introduction of pallets and fork-lift trucks for handling the inbound freight, a saving of 24 cents a ton was made at the track level and of 61 cents at the street level (the saving in elevating is including in the street-level dock figure). The total saving of 85 cents a ton represents a reduction of 14.1 per cent in handling costs. During August, 1946, 10,367 tons of inbound freight (including 32 tons of transfer freight moved by truck) were handled, while in August, 1947, the comparative tonnage was 8,013 (including 441 tons of transfer freight handled by truck). The table shows the relative handling costs per ton.

Inbound Freight	Cost Per Ton—Cents		
	August 1947	August 1946	Increase or Decrease
Labor—track level	194	218	D 70
elevation			
street level	281	351	D 70
Total labor	500	601	D 101
Cost of pallets	1	—	I 1
Maintenance of equip.	13	—	I 13
Fuel & lubrication	2	—	I 2
Total	16	—	I 16
Total—All Costs	516	601	D 85

In the outbound operation, which does not involve transfer between levels, the use of Chore Boys, supported by fork-lift and tractor operations, also showed large savings. In this, a check run during January, 1948, showed a reduction in per-ton costs of handling from $2.321 under manual operation to $1.741 under mechanical operation. The savings of 58 cents per ton represents a reduction of almost 25 per cent in handling costs. It was also found that the tons handled each hour by Chore Boy gangs averaged 1.09, while gangs working with hand equipment were able to handle only 0.73 tons each hour.

TWO MONTHS' BUYING TOPS $470 MILLION

Railroads spent about 12 per cent more for supplies, exclusive of equipment, this year than during the corresponding months last year

Purchases by Class I roads of materials, supplies and fuel, exclusive of equipment, during the first two months of 1948 were up about 12 per cent from the 1947 figure for similar items. Equipment orders during the comparable periods were almost exactly the same, with orders totaling $128,497,000 for the first two months of 1947, and $128,319,000 for the same period of 1948. Outlays for materials, supplies and fuel during the first two months were $307,087,000 and $343,534,000, respectively, for 1947 and 1948.

February, 1948, expenditures for materials, supplies and fuel increased 16 percent from the February, 1947, total of $146,808,000. Total purchases, including equipment orders, also were up 14 per cent from February of the previous year. All items with the exception of equipment and ties showed increases from the 1947 figures. February, 1948, purchases declined slightly from the January figures, principally because there were two less days in the month. Despite this slight falling off in total purchases, buying of manufactured products during February was about $8,000,000 above that for January.

1948 Railway Purchases*

	February	Two Month Totals 1948
Equipment**	$ 63,492,000	$128,319,000
Rail	8,382,000	15,607,000
Crossties	4,570,000	9,719,000
Other Material	$ 88,357,000	175,683,000
Total from Manufacturers	$164,801,000	$329,328,000
Fuel	69,216,000	142,534,000
Grand Total	$234,017,000	$471,862,000

*Subject to revision
**Amount placed on order

Of the $63,492,000 worth of equipment ordered during February, approximately $42,792,000 went for 10,698 freight cars, another $17,000,000 for 142 passenger cars and $3,700,000 for 17 Diesel-Electric locomotives. Noticeable is the rise of 1,485 in the number of freight cars ordered from last month's total of 9,213 and the more than doubling of the number of passenger cars ordered, 59 compared to 142.

FEBRUARY* PURCHASES OF MANUFACTURED GOODS (Excl. Equip. & Fuel)

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$71,775	+41
1943	57,277	+77
1944	78,632	+29
1945	74,666	+36
1946	60,269	+68
1947	92,196	+10
1948	101,308	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$101,789	−1
Mar. '47	104,313	−3
May '47	109,506	−8
July '47	109,973	−8
Sept. '47	99,867	+2
Nov. '47	102,671	−1
Jan. '48	99,701	+2
Feb. '48	101,308	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$148,705	+35
1943	115,125	+75
1944	156,937	+28
1945	152,610	+32
1946	138,124	+46
1947	193,985	+ 4
1948	201,009	

FEBRUARY* PURCHASES OF RAIL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$3,813	+119
1943	4,340	+ 93
1944	6,264	+ 34
1945	5,962	+ 41
1946	842	+895
1947	7,109	+ 18
1948	8,382	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$7,810	+ 7
Mar. '47	6,855	+22
May '47	7,050	+19
July '47	8,114	+ 3
Sept. '47	7,199	+16
Nov. '47	7,364	+14
Jan. '48	7,225	+16
Feb. '48	8,382	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$6,884	+126
1943	9,151	+ 71
1944	12,687	+ 23
1945	11,696	+ 33
1946	5,931	+163
1947	14,919	+ 5
1948	15,607	

FEBRUARY* PURCHASES OF CROSSTIES

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$4,814	− 5
1943	4,530	+ 1
1944	6,675	−32
1945	5,459	−16
1946	6,122	−25
1947	6,704	−32
1948	4,570	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$7,179	−36
Mar. '47	7,930	−42
May '47	8,165	−44
July '47	8,256	−45
Sept. '47	7,074	−35
Nov. '47	5,766	−21
Jan. '48	5,149	−11
Feb. '48	4,570	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$9,685	+ 1
1943	8,567	+13
1944	13,570	−28
1945	11,060	−12
1946	11,944	−19
1947	13,883	−30
1948	9,719	

*Subject to revision

FEBRUARY* PURCHASES OF OTHER MATERIAL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$63,148	+40
1943	48,407	+83
1944	65,693	+34
1945	63,245	+40
1946	53,305	+66
1947	78,383	+13
1948	88,357	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$86,800	+2
Mar. '47	89,528	—1
May '47	94,291	—6
July '47	93,603	—6
Sept. '47	85,594	+3
Nov. '47	89,542	—1
Jan. '48	87,326	+1
Feb. '48	88,357	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$132,136	+33
1943	97,407	+80
1944	130,680	+34
1945	129,854	+35
1946	120,249	+46
1947	165,183	+ 6
1948	175,683	

FEBRUARY* PURCHASES OF FUEL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$31,991	+116
1943	41,542	+ 67
1944	50,041	+ 38
1945	43,349	+ 60
1946	49,345	+ 40
1947	54,612	+ 27
1948	69,216	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$58,490	+18
Mar. '47	57,447	+20
May '47	51,490	+34
July '47	48,482	+43
Sept. '47	55,124	+26
Nov. '47	62,780	+10
Jan. '48	73,318	— 6
Feb. '48	69,216	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$64,842	+20
1943	81,425	+75
1944	100,382	+42
1945	91,175	+56
1946	100,657	+42
1947	113,102	+26
1948	142,534	

FEBRUARY* TOTAL PURCHASES (Excl. Equip.)

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$103,766	+64
1943	98,819	+73
1944	128,673	+33
1945	118,015	+44
1946	109,614	+56
1947	146,808	+16
1948	170,525	

Feb. '48 Compared to Other Months '47 and '48 (000)

Month	Amt.	% Change
Jan. '47	$160,279	+ 6
Mar. '47	161,760	+ 5
May '47	160,996	+ 6
July '47	158,455	+ 8
Sept. '47	154,991	+10
Nov. '47	165,451	+ 3
Jan. '48	173,018	— 1
Feb. '48	170,525	

Two Month Totals '48 and Other Years (000)

Year	Amt.	% Change
1942	$213,547	+61
1943	196,550	+75
1944	257,319	+34
1945	243,785	+41
1946	238,781	+44
1947	307,087	+12
1948	343,543	

FEBRUARY* INVENTORIES OF SCRAP

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$10,941	+17
1943	10,408	+23
1944	9,937	+29
1945	10,021	+28
1946	11,677	+10
1947	11,929	+ 7
1948	12,804	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$12,572	+ 2
Mar. '47	17,017	—25
May '47	12,766	+ 1
July '47	9,239	+39
Sept.' 47	9,979	+28
Nov. '47	10,550	+21
Jan. '48	14,211	—10
Feb. '48	12,804	

FEBRUARY* INVENTORIES OF FUEL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$40,427	+77
1943	43,654	+64
1944	49,056	+46
1945	56,398	+27
1946	55,613	+29
1947	51,164	+40
1948	71,635	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$49,873	+44
Mar. '47	52,233	+37
May '47	55,973	+28
July '47	56,565	+27
Sept. '47	63,025	+14
Nov. '47	57,290	+25
Jan. '48	69,031	+ 4
Feb. '48	71,635	

FEBRUARY* TOTAL INVENTORIES

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$481,475	+62
1943	504,329	+55
1944	543,262	+44
1945	607,180	+28
1946	604,799	+29
1947	673,567	+16
1948	779,876	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$653,153	+19
Mar. '47	691,487	+13
May '47	720,591	+ 8
July '47	734,253	+ 6
Sept. '47	742,039	+ 5
Nov. '47	748,112	+ 4
Jan. '48	765,540	+ 2
Feb. '48	779,876	

*Subject to revision

FEBRUARY* INVENTORIES OF RAIL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$22,705	+45
1943	19,583	+68
1944	24,331	+35
1945	25,149	+31
1946	22,439	+47
1947	31,447	+ 5
1948	32,936	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$30,192	+ 9
Mar. '47	31,217	+ 6
May '47	26,875	+23
July '47	26,536	+24
Sept. '47	29,766	+11
Nov. '47	29,158	+13
Jan. '48	31,891	+ 3
Feb. '48	32,936	

FEBRUARY* INVENTORIES OF CROSSTIES

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$60,944	+43
1943	56,587	+54
1944	72,039	+21
1945	75,259	+16
1946	75,886	+15
1947	88,293	— 1
1948	87,207	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$83,891	+ 4
Mar. '47	92,861	— 6
May '47	89,906	— 3
July '47	88,686	— 2
Sept. '47	83,771	+ 4
Nov. '47	90,451	— 4
Jan. '48	84,672	+ 3
Feb. '48	87,207	

FEBRUARY* INVENTORIES OF OTHER MATERIAL

Feb. '48 Compared to Other Febs. (000)

Year	Amt.	% Change
1942	$346,458	+66
1943	374,097	+54
1944	387,899	+48
1945	440,353	+31
1946	439,184	+31
1947	490,734	+17
1948	575,294	

Feb. '48 Compared to Other Months '47 and'48 (000)

Month	Amt.	% Change
Jan. '47	$476,625	+21
Mar. '47	498,159	+15
May '47	535,071	+ 8
July '47	553,227	+ 4
Sept. '47	555,498	+ 4
Nov. '47	560,662	+ 3
Jan. '48	565,735	+ 2
Feb. '48	575,294	

POWER NETWORKS FOR PASSENGER TRAINS

Waukesha Motor Company develops alternating-current Diesel-engine-generator sets for mounting on cars which can be "train-lined" to insure power continuity

Alternating-current power plants which can be connected together by a train line are now being offered by the Railway Division of the Waukesha Motor Company, Waukesha, Wis., for supplying passenger trains with power for air conditioning, lighting and all other requirements.

The use of complicated switch gear for synchronizing (connecting two generators together) is avoided by placing a fluid coupling between the engine and the generator. With a number of such power plants connected by a train line, power from any generator can be used to supply or support additional power requirements on any other car in the train. This assures continuity of power and permits the operation of only a part of the power units on the train where the load is light. It also permits an improvement of maintenance schedules, since some units may be removed for overhauling during the season when air conditioning is not required.

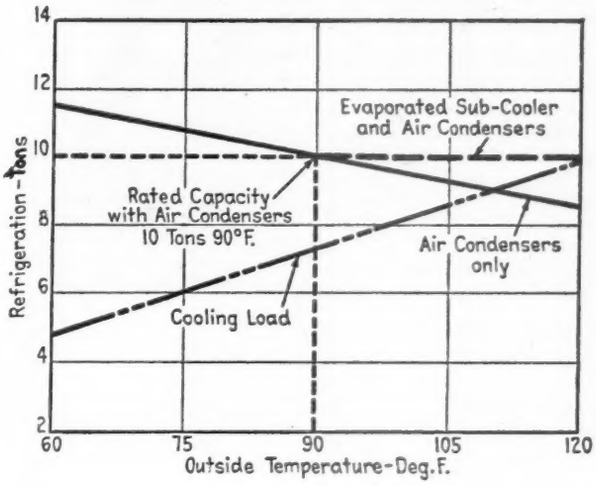
The system will supply electrical energy for the operation of air conditioning, lighting, fans, water coolers, winter heating, electric blankets, and all electric service needs which do not involve the actual motive power.

The power units consist of a six-cylinder, four-cycle, vertical Diesel engine, coupled to an alternating-current 220-volt, 60-cycle, 3-phase alternator of 31.25 kva. capacity, and driven at engine speed of 1,800 r.p.m. A companion package for air conditioning consists of a 4-cylinder refrigerant condensing unit of 5-10 tons capacity, driven by a 2-speed, a.c. motor.

With complete Waukesha equipment each car is an independent unit so that any car may be set out or in, and still maintain all air conditioning and other electric services without outside aid, and without power interruption to any other cars in a train.

Heavy capital investment in station or terminal facilities for battery charging to maintain the air conditioning or other electric service within the car is made unnecessary. The independently powered car can also maintain all electric services at full efficiency, whether the train is in motion or standing, whether the car is set out or is maintained in a consist, and without penalizing the motive power. Cars can be pre-cooled or pre-heated wherever they may be, as long as there is Diesel fuel in the supply system.

The fluid drive couples the engine to the generator,



Performance curve showing the capacities obtainable from the 5-10 ton electric two-speed condensing unit, and the added capacity when the automatic evaporative sub-cooler is employed

and provides the flexibility which permits the generator being "brought in," to step ahead or move back to synchronized position even though this may be as much as 180 deg. out of phase when the line switch is closed. The engine governor and electric speed coordinator controls the frequencies of units to be paralleled so that the operator has but one switch which can be thrown at will when parallel operation is desired.

This simple synchronizing operation offers some exceptional advantages, as it permits train-lining of cars so that in case of emergency or exceptionally heavy load conditions power may be borrowed or loaned from car to car through the train. For average operating conditions, connecting plugs and receptacles of 150-amp., 250 volt capacity, with 3-wire cable jumpers, are adequate for train-line connections. The system thus has practically all the advantages of head-end power without the latter's chief limitation—the inflexible and fixed train consist.

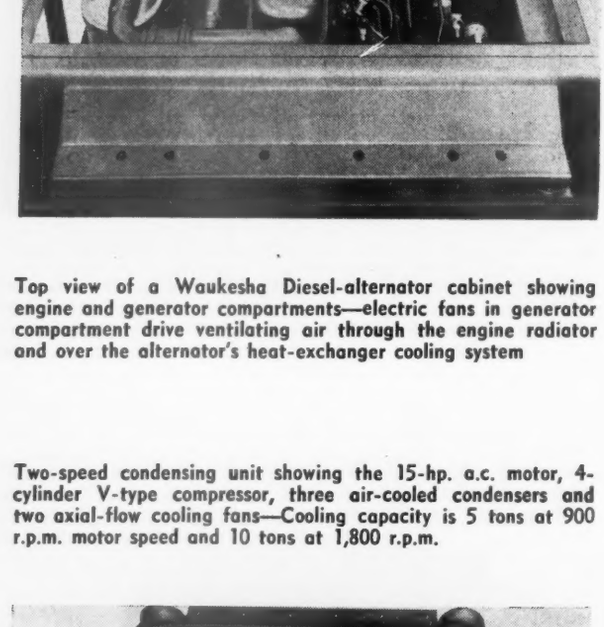
Improved Economy and Maintenance

In train-line operation each car becomes an element in a power grid or network, which inherently increases service reliability, for instead of depending on two or possibly three large units in a head-end power car, the electric load is shared by the entire group throughout the train, and single engine or generator failures do not cripple or cut the electric services. Under normal operating conditions one-third of the power units may be "out," and yet the remaining units could supply power sufficient for full-load performance on all cars.

Improvement in operating economy may be effected

Top view of a Waukesha Diesel-alternator cabinet showing engine and generator compartments—electric fans in generator compartment drive ventilating air through the engine radiator and over the alternator's heat-exchanger cooling system

Two-speed condensing unit showing the 15-hp. a.c. motor, 4-cylinder V-type compressor, three air-cooled condensers and two axial-flow cooling fans—Cooling capacity is 5 tons at 900 r.p.m. motor speed and 10 tons at 1,800 r.p.m.



during off-season or between-season use. At such times when there is little or no call for cooling or electric heating, the remaining load is so light that one power plant may serve a number of adjacent train-lined cars. Operating at or near its full rated capacity, the economy both in fuel and maintenance of the well-loaded unit is at or near its optimum, a condition rarely possible with head-end power, even if it is furnished and divided by as many as four engine-generators.

Another advantage claimed for the system is the greater flexibility in the planning and execution of routine maintenance and shopping operations. During the off-season a greater number of power plants can be removed and shopped for annual overhauls than would be feasible if train-lining were not possible or were not employed. Major overhauls can be scheduled on a more leisurely basis without overtime—an appreciable economy not possible when units must be rushed through to prevent or reduce the lay-up time of an entire power car and the revenue equipment which the units serve.

The Diesel-alternator power plant, like the gas engine air-conditioning and generator units made by Waukesha Motor Company, embodies under-car track mounting and shock absorbing suspension; flexible connections and roll-out features to permit routine servicing and inspection with full operation in the rolled-out position; sound silencing of the engine compartment, which keeps the recorded noise levels below the usual station or terminal levels; and axial flow, quiet type cooling fans for the engine radiator.

The entire power plant is assembled in a welded steel chassis, which is 77 in. long, 39 in. deep, and 27½ in. from car sill to bottom, and weighs, without mounting tracks, 2,500 lb. As it is a complete independent power package with quick-detachable fuel, exhaust, and electrical connections, it can be removed, replaced or exchanged, with little time and effort.

The Engine

The six-cylinder, four-cycle Diesel engine is of compact design to permit under-car installation within N.Y.C. clearance limitations, and still maintain its conventional vertical operating position. The bore is 3¾ in., the stroke is 4 in., and the piston displacement 265 cu. in. At its normal operating speed of 1,800 r.p.m. it develops 60 hp. American Bosch injection equipment is employed throughout with single orifice, pintle type nozzles, injecting the fuel into a controlled turbulence combustion chamber.

A special feature of this power plant is the engine governor built into the fuel-pump control, but responsive to the frequency of the electric output rather than the fluctuation in engine speed alone. This combination of electric and mechanical control compensates for the fluid coupling displacement so closely that the frequency is maintained within one-half cycle. Flickering of lamps or other manifestations of variation in running speeds are eliminated even with the extreme variations of load that result when the 15-hp. air conditioning motors are thrown on or off.

Smoothness of operation is, in large measure, due to the heavy, four-bearing, counterbalanced crankshaft with its torsonial vibration dampener, and the ac-

curate balancing of rods, pistons, and other reciprocating parts. The crankshaft bearings, both mains and pins, are hardened to 600 Brinell to insure long life. Both rod and main bearing shells are the renewable steel-backed copper-lead-babbitt precision type, for heavy duty service.

The wet cylinder sleeves are completely surrounded by the coolant, and are easily removed for renewing; they are individual alloy castings heat-treated to a Brinell hardness of 400, and together with the aluminum pistons and chrome-plated top piston rings, form a combination which insures a maximum of life to these vital parts.

Chrome-nickel intake and exhaust valves are mounted in alloy iron valve guides pressed into the single-piece alloy iron cylinder head. Exhaust valve seats are Stellite inserts.

Lubrication is accomplished by pressure, and intermittent, directed spray to every moving part. To insure uniformly adequate engine temperature in all weathers, whether or not the engine is in operation, a self-contained heat exchanger between the car heating system and the engine cooling system keeps the entire engine at its most efficient operating temperature, and insures instant starts at all times. Fuel tanks also have a steam heating coil connected to the car heating system to prevent cold weather congealing of the Diesel fuel. The conventional, heavy duty, 32-volt or 64-volt electric starter with automatic pinion engagement to the heat-treated ring gear on the engine flywheel is controlled either from the car locker push button or from the test button in the control box on the unit itself.

Connecting the alternator to the Diesel engine is the fluid coupling which plays a major role in simplifying the paralleling of alternators. By taking advantage of the complete flexibility of this type of drive, not only is it possible to throw the alternators on or off the train line by simple switching contactor controls, but the fluid coupling also acts as a perfect cushion to effectively "swallow" shock effects of all kinds between the engine and alternator. The simplicity of this drive, with no mechanical connections, belts, or fast-wearing parts, makes it the most economical to maintain as well as the smoothest to operate.

The alternator is of special interest because of the original design of its heat-exchanger cooling system. To meet the severe service requirements encountered in railway operation—complete protection against dust, moisture, and the elements—and still retain moderate dimensions, the alternator is fully enclosed with a constantly recirculating internal air stream passing from end to end over the brush and slip-ring assembly, through the windings and the hollow armature shaft. The heat picked up en route is then dissipated through the walls of the corrugated external cooling ducts which lie outside the generator frame and in the path of a continuous blast of outside air. With the ducts' large radiating capacity, the air within—not mixed with outside air—is rapidly cooled, and returns in the closed circuit to the slip-ring end of the generator and repeats the cycle. The alternator coils are form-wound throughout, and the insulation characteristics meet or exceed Class B requirements.

To simplify the alternator design with a corresponding increase in reliability, separate excitation by an air-cooled selenium rectifier and battery is employed. The rectifier is suspended beneath the car. It has sufficient capacity to charge batteries required for engine starting, controls, and emergency lighting, in addition to furnishing the current for the alternator excitation. If desired, more than one rectifier may be used, and the two operated in parallel when unusual demands for direct current service exist. Forced ventilation is provided by a motor-driven fan mounted in the rectifier casing. A filter is employed to remove dust and water from the air stream.

Two-Speed Condensing Unit

A 5-10 ton two-speed electric-drive condensing unit for air conditioning serves as a companion unit of the same size and general appearance as the Diesel alternator. It is powered by a 15 hp., 220-volt, 60-cycle, 3-phase, a.c. motor. Depending upon cooling demand and refrigerant pressure, it operates at either 1,800 or 900 r.p.m., providing either 10 or 5 tons refrigeration cooling capacity. The speed is controlled by external switching of the motor field circuits.

The compressor is a four-cylinder V-type unit which has long been standard on Waukesha ice engines. It is entirely self-contained with sealed-in lubricant and air-cooled cylinders. In the two side panels of the chassis are three large air-cooled condensers through which air is drawn from the outside, and discharged from each end, by two axial-flow fans within the motor and compressor compartment. The fourth panel is a water-tight locker containing the switch contactors and service tester's controls. The unit, like the Diesel alternator, is mounted on roll-out tracks suspended beneath the car, with rubber shock- and vibration-absorbing elements in the suspension trolley. Flexible refrigerant connections, as well as electric leads, permit this unit to be withdrawn from beneath the car for convenience in servicing. Like the Diesel alternator, it may be operated in its rolled-out position.

Running at the low speed, and with air condensers, the unit has a capacity of five tons. When the cooling demand increases, it automatically changes to high-speed operation. When operated with air condensers only, it has a capacity of 10 tons at 90 deg. F. outside temperature. With an evaporative sub-cooler, this 10-ton capacity is maintained up to at least 120 deg.

The two-speed operation is necessary for maintaining humidity control under all conditions. Where a system has but one output and speed, which is under simple car thermostat control, the cycling of the condensing unit creates an unpleasant rise in humidity during the "off" periods. With the two-speed operation, the humidity remains more nearly constant.

In winter operation, when the cooling unit is not needed, the Diesel alternator has available 15 to 20 kva. for electric heating that may be installed either in the air conditioning system, or in a liquid heat-exchanging unit for floor coils. Provision can be made for additional heat by reclaiming the heat of the engine exhaust through suitable heat exchangers, and, with a liquid heating system, electric immersion heaters can be applied for still further heating service. This offers possibilities of maintaining comfort temperatures by means of the power plant alone from maximum summer temperatures down to zero.

The station and general offices (above) of the Alaska at Anchorage are being enlarged during the course of the road's rehabilitation program

ALASKA RAILROAD SPENDING $48 MILLION FOR REHABILITATION

Government-owned road, "conceived in decadence and reared in indigence," presses plans for five-year period ending with 1952

The Alaska, owned and operated by the United States Department of Interior and which extends inland in a generally northerly direction from Seward, a port at the head of Resurrection bay, an arm of the Gulf of Alaska, to Fairbanks, approximately 470 miles, recently announced a general construction and rehabilitation program to cost about $48,000,000 and take up to five years for completion. Several contracts already have been awarded for portions of the work involved (see *Railway Age* of December 13, 1947, page 78).

Four additional stages in the program have been advanced recently, the first calling for the construction of a terminal yard at Fairbanks consisting of approximately 15 miles of track, for which all the rail, fittings, appurtenances and ties will be supplied by the railroad. Earthwork in this project will consist of about 287,000 cu. ft. of ballast. The second stage involves the construction at the Fairbanks terminal of various installations, including a 170-ft. by 450-ft. passenger, freight and baggage terminal; a structural steel and concrete two-story fire station, 40-ft. by 40-ft.; a combination locomotive coal, sand and water station, 25-ft. by 100-ft. by 80-ft. high; a double-tracked ash-handling and conveyor system; a power house of an estimated 1,500-kw. capacity; a service road approximately 9,500-ft. long and consisting of 47,000 cu. ft. of gravel fill and surfacing; nine buildings having reinforced concrete footings, foundation walls and floors, structural steel frames and metal wall panels; and several smaller buildings of wood frame construction.

The third stage calls for the completion of 98.7 miles of track raising, bank widening and cross and switch tie renewal between Nenana and Fairbanks and between Caswell and Curry. Involved in stage four are the replacement of 94 track-miles of 70-lb. A.S.C.E. section rail with 115-lb. A.R.E.A. rail between Potter

SUMMARY OF THE ALASKA RAILROAD'S REHABILITATION PROGRAM

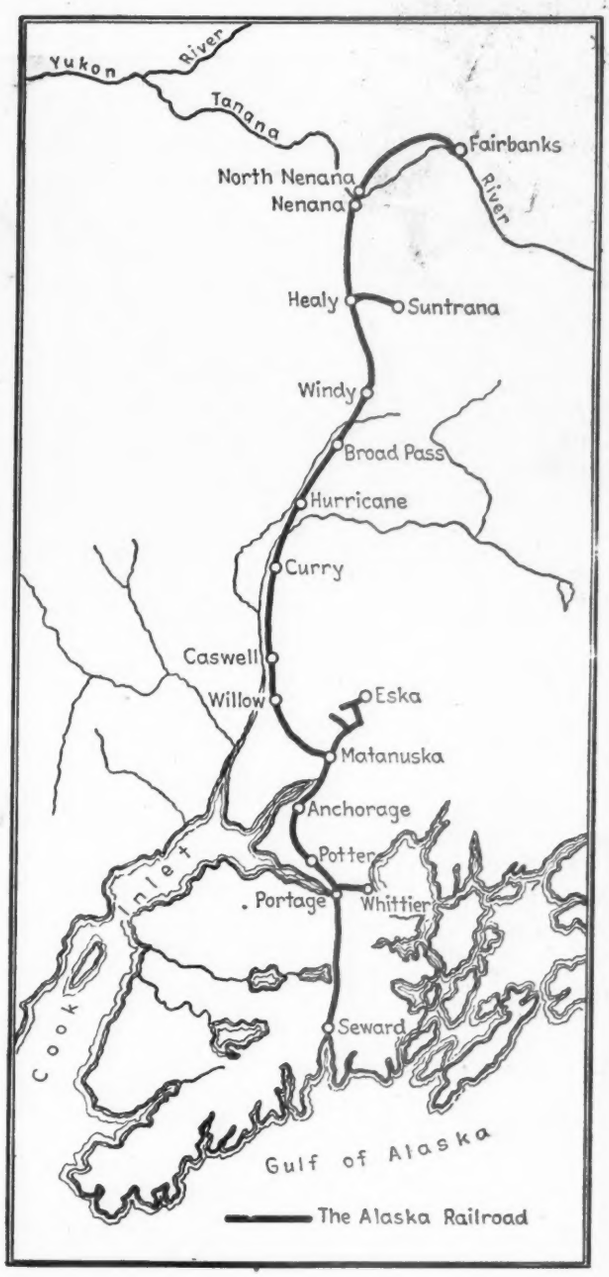
Showing Yearly Apportionment of Work (All Figures Estimated)

	1948	1949	1950	1951	1952	Totals
Roadway and Track	$ 9,845,900	$2,487,800	$ 8,907,620	$2,756,920	$1,342,550	$25,340,790
Bridges, Trestles, Culverts and Tunnels	795,000	1,271,200	2,019,400	910,200	774,200	4,770,000
Telegraph and Telephone Lines	105,000	114,000	116,000	—	—	335,000
Buildings and Structures	4,305,000	1,090,000	1,036,000	1,830,000	266,500	8,527,500
Locomotives and Rolling Stock	3,328,000	1,827,500	—	—	—	5,155,500
Transportation of Surplus	2,730,000	1,009,000	—	—	—	3,730,000
Totals	$21,108,900	$7,790,500	$11,079,020	$5,497,120	$2,383,250	$47,858,790

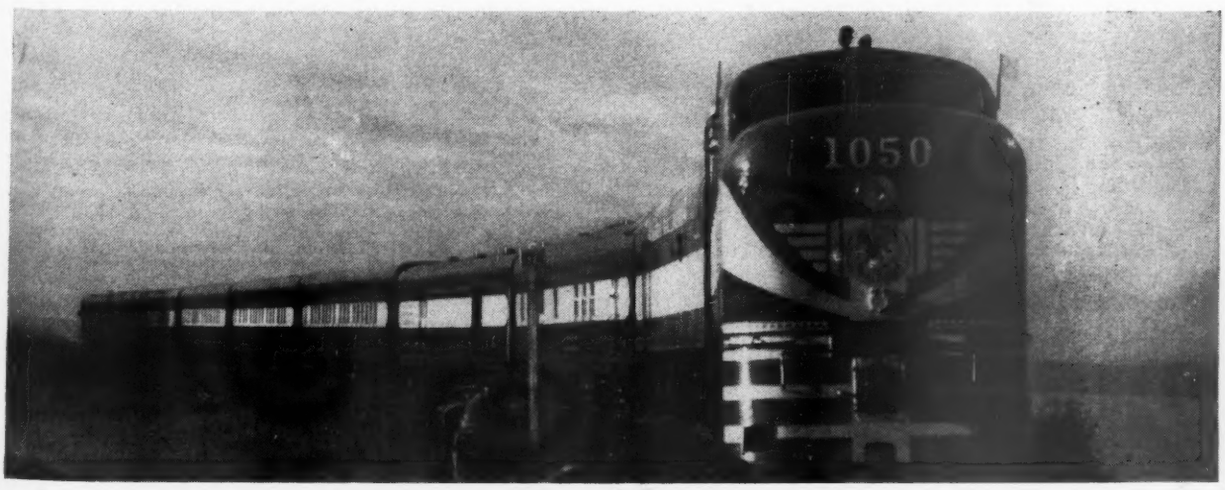
and Anchorage, Matanuska and Willow and Hurricane and Windy. All rail, fittings and appurtenances will be provided and transported to the sites by the railroad. A contractor will furnish labor and equipment.

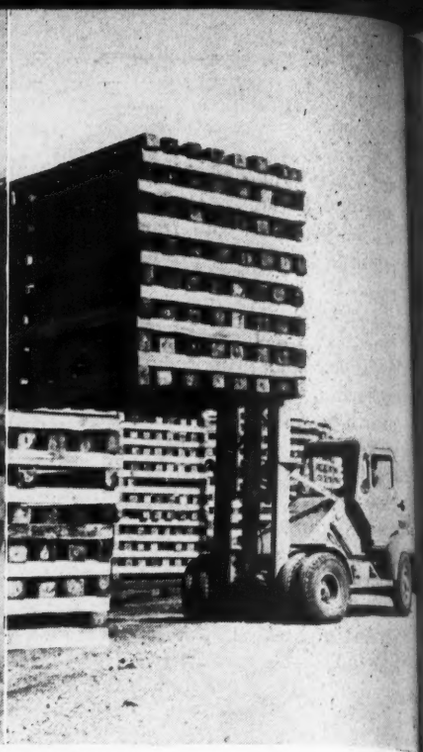
The table lists the proposed apportionment of expenditures for the entire program from 1948 to 1952, inclusive. The proposed expenditures show the sums authorized to be contracted for by the railroad in each of five years for various types of work. Actual cash expenditures during 1948, it is estimated, will total $6,108,900, spread through the following categories: For the transportation of material and buildings acquired from government surplus at no cost, $2,730,000; for roadway and track, $1,643,000; for motive power, $700,000; for buildings, $510,000; for bridges, trestles, tunnels and culverts, $420,000; for telegraph and telephone lines, $105,000. The increased volume of business and savings expected to result from this year's program, the road's management thinks, will enable it to reduce rates in the near future. It is estimated gross revenues during 1948 will amount to $11,000,000.

According to the most recent progress report, the need for the rehabilitation program was established by a survey of the properties undertaken during the last months of 1945. The program contemplates development of the road to improve its services, which are essential to the military and industrial development of the territory, to effect economics that will be reflected in rate reductions and, through these lower transportation costs, stimulate the growth and development of agriculture, industry and commerce. Facilities and service that will efficiently meet current requirements are to be provided immediately and, in addition, the road must anticipate the development of its territory and be prepared for it when it materializes. (The last major project on the Alaska, which involved the construction during the early months of the recent war of a 12-mi. single-track cut-off line from Portage to Whittier to establish, at the latter place, an additional salt-water terminus for the road with a more protected location than Seward, was reported in an illustrated article in *Railway Age* of February 24, 1945, page 374.)



The Diesel-hauled "Aurora" (below), an Alaska streamliner consisting of two baggage-mail cars, four coaches and one dining-lounge car, operates tri-weekly between Anchorage and Fairbanks





MECHANICAL TIE AND TIMBER-HANDLING EQUIPMENT IS BEGINNING TO INVADE THE TREATING PLANTS OF THE COUNTRY WITH PROMISE OF ALLEVIATING THE MANPOWER SHORTAGE AT MANY POINTS AND OF EFFECTING SIZEABLE ECONOMIES

SEEK TO BROADEN THE BENEFITS OF TIMBER TREATMENT

Wood-Preservers meet with railroad men and other users at St. Paul, Minn., to consider improved preservatives, better treating techniques, and most effective use in the field

The week of April 26—at St. Paul, Minn.—was a notable one for the wood-preserving industry, and, incidentally, for the railroads, which gave birth to the industry in the United States and which are still the largest consumers of lumber products treated against decay and insect attack. The occasion was the forty-fourth annual convention of the American Wood-Preservers' Association—April 27-29—where producers and users put their heads together, as it were, to consider the problems of both parties in the interest of improved timber products and greater effectiveness and economy in their use.

During the three-day session, which was attended by a large number of railway officers from all parts of the country, there were a total of 24 technical reports and 14 papers crowded into a program which also included visits to nine wood-preserving plants. Of special interest to the railways as timber users were the reports on some of the newer chemical preservatives, with new tentative specifications for pentachlorophenol and copper naphthenate; reports on methods of fireproofing wood, including a favorable report on the performance of chromated zinc chloride and chromated zinc chloride (FR) as fire retardants; an address by P. D. Brentlinger, forester of the Pennsylvania, on the Pressure Treatment of Lumber for Railway Cars; another by C. E. Ekberg, bridge engineer of the Northern Pacific, describing the reconstruction of a portion of the Northern Pacific's large ore dock at Superior, Wis., with treated timber; and a lantern-slide report by the Committee on the Handling of Forest Products, of which A. E. Larkin, manager of Republic Creosoting Company, was chairman. This latter report pictured the latest developments in crosstie handling at five commercial plants, including the use of a power-operated boom for breaking the loads in box cars, and both fork-lift trucks and portable elevators for moving ties into and out of storage piles.

All of the sessions were presided over by A. J. Loom, general superintendent timber preservation and tie treating plants of the Northern Pacific, Brainerd, Minn., assisted by First Vice-President G. B. McGough, superintendent of Bond Brothers, Louisville, Ky.

Total registration was 460 members and guests, which compared with 496 at last year's meeting at Portland, Ore. The secretary's report showed an increase of 143 new members during the year to an all-time high of 1,211.

In the election of officers for the ensuing year, Mr. McGough was advanced to president; J. S. Giddings, superintendent, treating plant of the Atchison, Topeka & Santa Fe, Somerville, Tex., was advanced from second vice-president to first vice-president; F. W. Gottschalk, American Lumber & Treating Co., was elected second vice-president; H. L. Dawson was re-elected treasurer; and the following were elected to the executive committee—D. L. Lindsley, J. H. Baxter & Co., Los Angeles, Cal.; C. S. Sizemore, assistant manager, Forest Products Bureau, Illinois Central, Memphis, Tenn.; R. A. Bescher, manager treating department, Wood Preserving Division, Koppers Company, Orrville, Ohio; and J. A. Vaughan, research engineer, Southern Wood Preserving Company, Atlanta, Ga. In addition, F. D. Mattos, Oakland, Cal., was elected an honorary member. St. Louis, Mo., was selected for the convention next year, which will be held April 26-28.

President Reviews Developments

In his address at the opening session, President Loom reviewed the progress in association affairs during the year, and spoke at length of the growth of the wood-preserving industry; the development of new processes and preservatives; the efforts to reduce the mechanical wear of crossties; and the consideration being given to fire-retardant treatments, seasoning, and the mechanization of timber-handling at wood preserving plants. With regards to some of these latter developments he said in part:

"There is no longer any question about the economy of using treated wood for many purposes other than for crossties, and new methods and preservatives are

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CAPTIONS FOR FACING PAGE

Top left—A truck-mounted tie stacker and unstacker being used experimentally at the treating plant of the Forest Products Treating Company at The Dalles, Ore.

Top right—A specially-designed fork-lift truck stacking ties at one of the wood-preserving plants of the T. J. Moss Tie Company.

Top center—Another type of portable tie conveyor being used to unload ties from box cars at the plant of the National Pole Company, near Spokane, Wash.

Center—A fork-lift truck moving ties into and out of storage piles at one of the treating plants of the International Creosoting & Construction Co.

Bottom—This specially-designed, power-operated boom (shown at the right) clears the first 20 to 25 ties from the doorway area of loaded box cars at the Southern Wood Preserving Company's plant at Atlanta, Ga. Other power-operated equipment removes the remainder of the ties in groups.

being developed to meet present-day demands. Accelerated laboratory tests, as well as actual service records, indicate that many of these newer developments have definite preservative value.

"The decay-resistant treatment of railroad ties has proven so efficient that at present their protection against mechanical wear is considered on many railroads to be a bigger problem than protection against decay. This association has for many years cooperated with the American Railway Engineering Association in investigating ways and means to eliminate excessive checking, splitting and crushing, and otherwise to provide protection that is extending the service life of treated wood by increasing its resistance to mechanical wear.

"Proper seasoning has proven definitely essential to good treatment and increased ultimate service life. Aside from the usual methods of air-seasoning—kiln drying, incising and boiling under vacuum—chemicals are now being used in various ways.

"After many years of investigation and tests of preservatives and fire-retardant chemicals, applied by various methods, it is expected that a specification for the treatment of wood to make it fire resistant as well as decay resistant will soon be submitted for approval by our association.

"In recent years manpower shortages have intensified a study of mechanical-handling devices to replace tie-handlers and other piece workers at treating plants. Hourly rates of pay have been increased so much more proportionately than piece-work rates that there no longer remains the same incentive for young men to accept piece work. This accounts largely for the present shortage of piece-work tie handlers at many plants and the increasing necessity for more mechanical-handling equipment. The demand for such equipment has encouraged manufacturers to modify existing machines and to construct new devices to meet requirements that differ greatly at individual plants on account of variations in track layout, manner in which materials are loaded in cars for shipment to the plants, and types of cars furnished by the railroads for plant service."

Value of Treated Car Lumber

In his paper on pressure-treated wood for freight cars, Mr. Brentlinger reviewed the use of such wood for freight cars from the first installation in 1911 when the Burlington used treated material for car sills and flooring. A report on this subject to the association in 1919 showed that while 10 roads had had some experience with treated lumber, only one had employed pressure-treated car lumber. Another report to the association in 1923 brought out the fact that the average life of untreated stock-car decking was 2 to 6 years; and end posts 4 to 6 years; and end posts and flat-car decking 6 to 8 years.

During 1930, approximately 5 million board feet of pressure-treated car lumber were produced, which, according to Mr. Brentlinger, was the largest amount treated in any one year up to that ime. However, that the influence of the all-steel freight car was being felt is seen in a report to the Wood-Preservers' Association in 1931 to the effect that the wood preserving industry "was rapidly losing ground in this field because of the limited use of treated wood and the expected obsolescence of the wooden freight car." In spite of this, Mr. Brentlinger said that advance reports indicate that nearly 6 million board feet of car lumber were treated in 1947. Continuing his remarks primarily with regard to the outlook for treated lumber in the car field, he said:

"The amount of car lumber treated annually is only a small portion of the volume of treated lumber that could be utilized where the economies of treated lumber have been proven by performance tests. The all-steel car meant one with an all-steel frame and superstructure, with wood flooring, lining and framing. Therefore, today as yesterday, there remains the opportunity for the preservation of flooring, lining, framing, stock-car slats and gondola sides for new cars and repairs, as well as for running board repairs. Obviously, there have been, and still are, many wooden parts that could be economically preserved against decay. Had earlier attempts to promote treated car materials been directed toward the remaining wooden members in freight cars, and efforts not been confined to box cars, more treated car lumber would have been installed. The wooden parts of the freight cars now in service still remain a large potential market for treated car lumber.

Treated Lumber for Stock Cars

"Stock cars each have 4,000 ft. b.m. of lumber that should be treated. By using an average life figure of five years the potential annual quantity of treatable car lumber exceeds 45 million board feet a year. The popular demand for treated stock-car lumber substantiates claims that the use of this material is an economical procedure. Records indicate that treated stock car parts are tripling, and in some cases quadrupling, the life of untreated wood formerly used."

Mr. Brentlinger then analyzed the relative costs of treated and untreated lumber for stock-car flooring, on the basis of 15 years' average life for southern yellow pine treated with 8 lb. of No. 1 creosote per cu. ft., and 5 years' average life for untreated wood of the same grade and species. In this he showed that the total cost for the treated flooring per car, installed, was $170 as compared with $140 for the untreated flooring, which for the treated material represents an annual cost of $11.33 as against $28 for the untreated material.

Continuing, Mr. Brentlinger said: "Records of treated stock cars in service for 15 years substantiate the use of the cost-per-year figures given in comparing treated and untreated stock-car flooring. With repair costs increasing sharply, as illustrated by the fact that during the period 1941-45 they were tripled over the 1931-35 period, maintenance engineers would do well to ascertain the advantage of pressure-treated car lumber.

"Today any part of any type of car can be treated with some preservative without resultant damage to the cargo. The choice of preservative depends upon the part of the car to be treated."

Continuing its assignment to compile a list of parts for cars for which treated lumber has been used, the Committee on Uses of Treated Wood for Car Lumber, of which W. P. Arnold (Koppers Company) was chairman, presented a list which showed that during

1947 nineteen roads had used 7,214,889 ft. b.m. of creosoted and salt-treated lumber for a variety of car and locomotive parts, including decking, stringers, furring, sills, roofing and running boards. It also reported on creosoted freight-car decking on the Santa Fe, installed in 1940 and 1941, and said that on the basis of results to date, as no replacements have been made, the railroad feels that it is securing at least six to eight years longer service from the creosoted decking than from untreated decking.

Standard for Pentachlorophenol

Last year the Committee on Preservatives, of which R. H. Baechler (Forest Products Laboratory) was chairman, reported on the amount of pentachloraphenol solutions being used and also presented on the effectiveness of such solutions as shown by laboratory and field tests. Since the results of these tests were consistently favorable, and since petroleum solutions of toxic chemicals appear to fill a definite need in wood preservation, the committee presented a specification for pentachlorophenol, which was adopted as a tentative standard.

It recommended that treating solutions be required to contain at least 5 per cent pentachlorophenol, and that the use of solutions in which pentachlorophenol is the principal ingredient be excluded from the treatment of piles. It is known, the committee stated, that the performance of pentachlorophenol as a wood preservative is influenced by the character of the petroleum oil in which it is dissolved. Best results are obtained with fairly heavy oil of low volatility. The committee did not present specifications for the oils to be used as solvents for pentachlorophenol, but it did call attention to some general information on the subject published in its 1947 report, and particularly to the following opinion offered therein: The use of as high a boiling petroleum as is consistent with penetration and cleanliness requirements for the treated wood is considered the practice involving the least risk.

Copper Naphthenate Considered

Referring to its report of last year, in which the committee reported on the amount of copper naphthenate solutions being used in treating processes, and also presented data on the effectiveness of such solutions as shown by laboratory and field tests, the committee this year stated that the results of these tests have been consistently favorable, and recommended for adoption a specification for copper naphthenate. It recommended that the concentration of copper naphthenate in treating solutions be not less than that equivalent to 0.75 per cent metallic copper. Furthermore, it recommended that pending the accumulation of more extensive service data, the use of solutions in which copper naphthenate is the principal ingredient be excluded from the treatment of piles. These recommendations were adopted.

As in the case of pentachlorophenol, the committee said that the performance of copper naphthenate seems to be affected by the nature of the petroleum oil in which it is dissolved. It presented no qualifications for such oil, but pointed out that the general recommendations offered regarding solvents for pentachlorophenol are believed to apply also to solvents for copper naphthenate, with the exception that adequate solvency may be assumed for all petroleum oils.

Reporting on the properties and methods of testing petroleum oils and creosote-petroleum solutions used in wood preservation, the committee said that considerable progress has been made in the development of specifications for petroleum suitable for use with other preservatives, such as pentachlorophenol and copper naphthenate, and reported that work is being done on the evaluation of two new methods employing selective solvents for analyzing creosote-petroleum solutions.

Continuing the discussion of copper naphthenate was a paper by Arthur Minich and Milton Goll (Nuodex Products Company) on its technical aspects as a wood-preservative chemical. In summarizing their paper, the authors said: (1) Copper naphthenate is a chemical compound of uniform performance; (2) it is a highly effective and permanent wood preservative; (3) it is easy to apply; and (4) it is safe to handle."

Controls in Seasoning

In a report on Seasoning Practices, the committee, of which P. B. Mayfield (International Creosoting & Construction Co.) was chairman, presented results to date of tests planned to determine the effect of various chemicals on the prevention of decay and checks during the air-seasoning period. Concerning phenyl-mercury-oleate, the committee said that indications are that small amounts will lengthen the permissible maximum seasoning period of Southern pine lumber to 18 months, and possibly a little longer, without damage to the lumber by decay—and to 24 months or longer without extensive damage of that nature.

Referring to the test on urea and borax-boric acid-treated material, started July 27, 1947, the committee said that after four months' seasoning, both the urea and the borax-boric acid-treated lumber showed slightly less checking than the matched pieces of untreated lumber.

With respect to a test of borax-boric acid-treated oak ties, the committee reported that after six months' seasoning there was slightly less checking in the pre-treated material than in similar untreated material of the same age.

With regard to the use of methylolurea in the treatment of Southern yellow pine ties and Southern pine posts, the committee stated that its application apparently increased hardness. It pointed out that the object of these tests is to determine, if possible, the benefits from this increased hardness of the ties in the way of greater resistance to tie-plate cutting in track and to ascertain what, if any, preservative benefit is derived from the methylolurea.

Vapor-Drying Rated High

Turning to consideration of methods and results of seasoning by special methods, the committee discussed at some length boiling in oil, solvent seasoning and vapor-drying. Of the three, it said that vapor-drying is the only process which has reached the stage of significant commercial importance.

Following a general description of the vapor-drying

process, (see *Railway Age* of March 9 and 16, 1946) the committee said in part:

"The process is used for seasoning any species and size of lumber in preparation for preservative treatment. The drying time required for reducing the moisture content of green hardwood crossties to that of air-seasoned stock ranges from 8 to 12 hours, depending on the temperature of the boiling point of the drying agent used. Pine poles require about the same length of time as is currently employed in the steam and vacuum process to reduce the moisture content to that of air-seasoned stock from the green condition.

"Use of this process for the seasoning of hardwood crossties very materially reduces the amount of splitting and checking that normally occurs in air seasoning, and observation of vapor-dried ties in test track on the Southern over a period of four years shows that the progressive increase in width and depth of checks that occurs in these ties in service is negligible. This process is particularly advantageous for the seasoning of hardwoods, such as gum, that have been ruled out by many users because of their susceptibility to decay in air seasoning. Although the cost of seasoning crossties by the vapor process is slightly more than that of air seasoning, the advantages gained by its use should more than offset this difference to the user of treated crossties.

"Comparative tests on pine poles conditioned by the steam and vacuum process and mated vapor-dried specimens have shown that the latter possessed 20 to 25 per cent greater strength than the former. It has been found also that the distribution of preservative in the vapor-dried poles is much more uniform than that in steam and vacuum-conditioned poles."

With regard to high-frequency seasoning, the committee said that, from information available from the exploratory work that has been done in the drying of wood by radio frequency, it is evident that the economics of the method are still in doubt and that further work is required to develop methods suitable for operations on a commercial scale.

Fireproofing on Increase

Again this year detailed consideration was given to the subject of fireproofing chemicals and treatments, with the indication that such treatments are securing increased acceptance. The Committee on Fireproofing, of which George M. Hunt (Forest Products Laboratory) was chairman, reported that 80 per cent of its members favored preparing separate specifications for fire-retarding chemicals and for treatment with such chemicals.

As a result, it presented a number of requirements for a fire-retarding chemical that it felt should be met in order for the chemical to receive consideration as an A.W.P.A. standard.

A report on tests on the durability of the fire retardance of fire-retardant treated wood, and the permanence of fire-retardant salts, including chromated zinc chloride and chromated zinc chloride (FR), the new fire-retardant formulation of chromated zinc chloride, was made by R. H. Bescher, W. T. Henry and W. A Dreher (all of the technical department of the Koppers Company). A summary of this paper stated that the results of these tests prove that chromated zinc chloride and chromated zinc chloride (FR) possess a higher degree of permanence than the other chemical fire-retardant formulations tested. Also, that the use of fire-retardant, water-repellant sealers will further prolong the effectiveness of these fire retardants where leaching is an important factor.

Laminated Bridge Members

Continuing its study of preservative and fire-retardant treatments of laminated members, a special committee of which D. L. Lindsley (J. H. Baxer & Co.) was chairman, reported on a cooperative project of the Wauna Lumber Company, the Spokane, Portland & Seattle, and the American Lumber & Treating Co., involving the lamination of 15 bridge stringers.

The committee also reported on a series of strength tests on glued laminated beams to determine the effect of standard incising, and also presented a progress report on some laminated southern pine railroad stringers, creosoted after lamination, which were installed on the Texas & Pacific in October, 1944.

In this latter report, N. W. McGough (Texas & Pacific) stated that, as of an inspection of this installation on October 2, 1947, "These timbers have served under very heavy traffic for more than three years, and do not show any signs of delamination or any other deterioration."

Reporting on methods of determining the heartwood and sapwood in Southern pine, Douglas fir, gums and other commercial species, the Committee on Inspection, of which H. F. Round (Pennsylvania) was chairman, stated that it had investigated at least 15 possible stains with varied results. It reported that while some of these stains offer definite possibilities, it is believed that more tests and experiments must be made before any can be offered as standard practice. The committee also reported on mechanical and electrical means of inspecting standing poles for decay after they have been in line for some time. This report was supplemented by a paper on X-Ray Pole Inspection by Richard S. Stoker, line standards engineer, Detroit Edison Company.

The Committee on the Pressure Treatment of Oak Ties, Lumber and Piles, of which P. D. Brentlinger (Pennsylvania) was chairman, focused its attention for the year on a specification for the treatment of oak piles by pressure processes, and submitted such a specification, which was adopted. In so doing, it said that committee members believe that creosote-petroleum is not suitable for the treatment of piles for use in coastal waters, and recommend that creosote-petroleum be eliminated entirely.

It recommended that the maximum retention stipulated in the specifications be creosote or creosote-coal tar solutions.

During the past year, the Committee on the Pressure Treatment of Gum Ties and Lumber, of which W. W. Ward (Pennsylvania) was chairman, accumulated penetration results from the treatment of 67 charges of gum ties, and borings were taken from each species. Under the present penetration requirements, the committee said, 40 of these charges would be rejected, which was an indication that the requirements are too severe. Therefore, it recommended a number of changes in the specification for gum ties and lumber, includ-

ing one to lower the penetration requirements for red gum from 2.0 in. to 1 5 in., or 75 per cent of the depth of sapwood.

Last year the association approved tentative standards for round pine posts, providing for the use of the new standard preservatives—chromated zinc chloride, tanalith and zinc meta arsenite—except under conditions where leaching is a major problem—and creosote-petroleum solution, except where the surface of the wood must be painted. This year the Committee on the Pressure Treatment of Poles, of which G. Q. Lumsden (Bell Telephone Laboratories) was chairman, recommended that these preservatives be accepted on a standard basis as provided for in the standard specification for the preservative treatment of posts by pressure processes. It also recommended that ponderosa poles be treated under the specifications in effect for Southern pine poles, and that Western larch poles be treated under the specifications in effect for Douglas fir and Western hemlock poles.

With respect to the non-pressure treatment of poles, a committee of which C. M. Sporley (Valentine-Clark Corporation) was chairman, presented comments made by committee members relative to the ground-line treatment of poles in line that show decay at the ground line, one of these dealing with the Osmoplastic method of ground-line treatment of chestnut and Western red cedar poles. The committee also presented detailed penetration data on butt and full-length submersion-treated poles from five plants, covering various wood species and preservatives.

An address of particular interest to the users of poles was one by I. V. Anderson, chief, Forest Utilization Service, North Rocky Mountain Forest and Range Experiment Station, Missoula, Mont., on Pole Timber Supplies of the Northern and Far Western States.

Service Tests

Four standing committees of the association again presented reports on service records of ties, poles, posts and piles. The Committee on Tie Service Records, of which W. R. Goodwin (Minneapolis, St. Paul & Sault Ste. Marie) was chairman, presented reports on test tracks on the Erie, the Santa Fe, the Northern Pacific and the Great Northern. It also presented data collected by he Forest Products Laboratory on its inspection of ties in test tracks on the Chicago, Milwaukee, St. Paul & Pacific at Hartford, Wis., and at the Fair Grounds and University Avenue tracks at Madison, Wis.

The Committee on Pole Service Records, of which C. H. Amadon (Bell Telephone Laboratories) was chairman, presented new reports on creosote Douglas fir poles on the Dallas-Kalamath Falls line of the Southern Pacific, and on butt-treated lodgepole pine poles on the Laramie-Salt Lake Line of the Union Pacific. The Committee on Post Service Records, of which J. O. Blew, (Forest Products Laboratory) was chairman, presented its usual service records on varied species at a wide number of locations.

The report of the Committee on Marine Pile Service Records, of which committee A. S. Daniels (Texas & New Orleans Wood Preserving Works) was chairman, this year was confined to a series of reports on creosoted Douglas fir piles in Southern Pacific structures in San Francisco Bay—by E. E. Mayo, chief engineer, Southern Pacific—and a report of a recent inspection of pentachlorophenol-treated posts by P. B. Mayfield, manager, research and development, International Creosoting & Construction Co

Most of the report of the Committee on Diversified Uses of Treated Wood, of which Leonard Perez (Koppers Company) was chairman, connected the use of treated materials in and about mines, but it contained the two following significant statements relative to the present competitive position of treated wood products as a result of increased prices.

"During the past year the price of forest products continued to rise beyond the point of competitive advantage over substitutes, to the extent that the problem was not one of finding new uses for treated wood, but of striving to hold standard markets into which substitutes (and raw lumber) were being drawn by high prices and uncertain supplies of the treated products.

"Whereas pressure-treated lumber, for instance, in prewar years was finding increasing favor as a factory roof-deck and floor material, during the past two years such substitutes as pre-cast concrete and cellular steel were fast gaining ground. It to be hoped that when the price of forest products comes more nearly into line with the price of other materials, the physical advantages of wood will regain favor for it."

Other Reports and Papers

The Committee on the Pressure Treatment of Miscellaneous Species, of which J. D. MacLean (Forest Products Laboratory) was chairman, recommended treating requirements for a number of species used for lumber, timber, piles and poles as regards the preservatives and reference to treatment for use in salt water. The preservatives to be used for ties, it indicated, should be creosote, creosote-coal-tar solution, or creosote-petroleum solution.

Among other papers presented to the convention, of interest to the railroads either as users or treaters, were the following: Experiments in the use of High Vacuum and Wetting Agents in the Preservative Treatment of Green Douglas Fir Lumber, by H. W. Angell, V. P. Hribar and W. A. McFarland (American Lumber & Treating Co.); the Chemical and Physical Properties of Hydrocarbon Oils are Related to Their Preservative Value, By J. A. Vaughan (Southern Wood Preserving Company); the Occurrence and Control of Sludge in Treating Solution, by A. Dale Chapman and Robert K. Johnston (Chapman Chemical Company); the Centrifuge Test for Determining the Sludging Characteristics of Oil-Type Wood Preserving Solutions, by P. B. Mayfield (International Creosoting & Construction Co.); Ground-Line Treatments on Eastern White Cedar Pole Stubs, by J. F. Harkom, M. J. Colleary and H. P. Sedziak (Canadian Forest Products Laboratories); International Termite Exposure Test, by G. M. Hunt (Forest Products Laboratory) and T. E. Snyder (U.S. Department of Agriculture); Comparison of Wood Preservations in Stake Tests, by J. Oscar Blew (Forest Products Laboratory); and Methods of Evaluating Wood Preservatives—Weathered Impregnated Wood Blocks, by Catherine G. Duncan and C. Audrey Richards (U. S. Department of Agriculture).

GENERAL NEWS

Transport Resolutions Adopted by C. of C.

Proceedings at meeting also included session on transport

A resolution opposing the establishment of a federal department of transportation under a secretary of transportation and another advocating the discontinuance at an early date of the operation of the government-owned Federal Barge Lines were among those adopted by the Chamber of Commerce of the United States at its 36th annual meeting held in Washington, D. C., April 26-29.

A highlight of the meeting was an April 28 luncheon session sponsored by the chamber's Transportation and Communication Department Committee, at which views of the railroads, motor carriers, air carriers and shippers with respect to "Essentials of Sound Transportation Conditions" were aired. The principal speaker at the meeting was Dr. C. L. Dearing of the Brookings Institution, who discussed "Tomorrow's Outstanding Issues in Transportation." He was followed by C. McD. Davis, president of the Atlantic Coast Line; E. J. Buhner, president of American Trucking Associations; Robert Ramspeck, executive vice-president of the Air Transport Association; and A. H. Schwietert, president of the National Industrial Traffic League. The speakers were introduced by E. A. Nash, president of the Yellow Transit Company, Oklahoma City, Okla., and chairman of the committee.

The chamber would have the government get out of the barge business either through the liquidation or outright sale of the facilities of the Inland Waterways Corporation as a whole or in units.

Meanwhile, it held, no funds should be appropriated for the expansion, modernization or recapitalization of the I.W.C.

Aviation Resolutions—With respect to civil aviation, the chamber resolved that scheduled and irregular common carriers by air should be subject to regulation only by the federal government as to rates, service and safety. It also held that irregular carriers engaging in the transportation of passengers, directly or by charter, should be subject to the same inspection standards, pilot qualifications and other safety requirements as other common carriers by air, adding that financial responsibility to cover any liability for personal injury or property damage should be required.

Other civil aviation resolutions adopted by the chamber call for (1) the certification of local service air lines for five-year experimental periods; (2) regulation as to rates, service and safety of contract air carriers by the Civil Aeronautics Board; (3) encouragement of private flying; (4) a continuing program of aviation research on an adequate scale to meet the needs of national defense; and (5) modernization and development of the airways by the federal government in the interest of national defense.

"Air transport, now in process of expansion, requires continuation for the time being of regulation separate from that for other forms of transportation," the chamber resolved. "Such effective action as may be necessary should be taken to determine and express a unified government viewpoint on aviation matters. In the present condition of aviation development, the states should concentrate efforts on airport matters and other promotional work in the interest of aviation and should limit their regulating activities to cooperation with the federal government in the enforcement of the federal safety regulations."

The chamber also adopted several resolutions relating to urban transportation, including one stipulating that the major part of the costs of building and maintaining thoroughfares and expressways in urban areas should be paid for through "reasonable" motor vehicle and motor fuel taxes.

The Outstanding Issues—In his address before the transportation and communication department, Dr. Dearing asserted that, in order to achieve the required balance between the respective roles of government and private enterprise in transportation, the allocation of traffic among competing transport agencies must be governed by rates that reflect true economic costs. At the same time, he held that transport costs and rates must be kept in balance and that the corporate structure of the railroads "must in some way be accommodated to the realities of modern competition and rate regulation."

Dr. Dearing said that Congress, in considering the appropriation of funds for waterway, highway and air development, saw fit to proceed without consideration of the policies which it had laid down with respect to regulation, adding that it gave no consideration to the fact that the end products of promotion and regulation might be antagonistic. "The net result," he said, "is a system under which national objectives are vague and at times contradictory; and a situation that tends to discourage the flow of capital into the privately owned sector of the industry."

According to the speaker, the "distorting effect" of public aids can, as a practical matter, be reduced only by (1) explicit and consistent standards governing the future legislative and administrative programming or expenditures for basic transport facilities; and (2) assessing the major costs of providing and maintaining public facilities directly against the transport agencies which demand and use them, rather than against the general taxpayer. "There is no other way to assure the economic allocation of traffic, so long as government finds it either desirable or necessary to provide basic transport facilities," he said.

Would "Integrate" Wage Bill—With respect to cost-price relationships, Dr. Dearing said that the permanent regulatory agencies should be given statutory jurisdiction over all unresolved contests between labor and management which affect the general public interest. If it is essential that rates, issuance of securities, extension of service, etc., be controlled under a system of plenary regulation, he said, it would appear equally essential that labor costs be integrated in some manner with other major phases of control.

Dr. Dearing said that the financial conditions of the railroads since the end of the war indicates that "something is amiss" in the governmental system under which the relationship between railroad labor costs and rates is determined. "One of these main difficulties arises because there is no coordination between these organically related processes," he stated, noting that there is normally a lag between the time-incidence of increased labor costs and the regulatory decision which sets the amount of increased revenue that will be available to meet such costs.

Turning to railroad corporate structure and rate making, Dr. Dearing stated that the spread between the earning power of individual railroads remains almost as great now as it was in 1920, when, he said, the first "official attack was made on this trouble area." "So long as this situation prevails," he added, "railroad management cannot hope to attain its cherished goal of an average 6 per cent return on net capital investment, without accepting some form of pooling or recapture of earnings. For obvious reasons, no regulatory agency . . . could approve a general

level of railroad rates which would produce returns for individual carriers ranging from a rate of less than 1 to 20 per cent . . . Under our current system of regulation, initiative for the solution of the weak-and-strong railroad problem rests with private management."

Davis Gives Railroad View—Commenting on Dr. Dearing's views, Mr. Davis asserted that any proposed appropriation of public funds to provide or maintain transportation facilities should be referred to the transportation regulatory body governing the particular mode of transportation involved. That body, he said, could then report to Congress its findings thereon with respect to the public interest, adding that, "to be in the public interest, any such appropriation must meet the test of non-discrimination."

Mr. Davis said that if labor costs were integrated in some manner with the control of rates and charges, the principal if not the only purpose served would be the elimination of time lag between increased labor costs and the increased revenue from increased rates to meet those costs. "I say that," he said, "because it is too much to expect that effective control of railroad labor costs could be accomplished so long as labor in other (unregulated) industries is free to use its economic force in sending the wage spiral upward. Too . . . the costs of materials and supplies constitute too large a factor to be left out of consideration of the balance relationship between costs and rate levels, which is essential for the preservation of private enterprise in the transportation industry."

With respect to the corporate structure of the railroad companies, Mr. Davis said that the first problem of the railroads is to obtain public recognition and support of a rate of return of not less than 6 per cent for the industry as a whole. The public has come to recognize and accept the need for an adequate rate of return from investment in so far as public utilities are concerned, he said.

"It is unquestionably true," he added, "that an average rate of return, say 6 per cent, for the industry as a whole would produce widely varying rates of return for individual railroads. That, however, in my opinion, is something to be worked out within the industry, which I believe can be done without the necessity of any form of either recapture of earnings or pooling of earnings."

Mr. Davis also advocated the consolidation of the weak railroads with the strong, but held that legislation along such lines is unnecessary. He urged that (1) the problems of the transportation industry should be left for solution by the industry; (2) undue restrictions upon the exercise of managerial initiative and discretion should be removed; (3) the transportation industry, within the bounds of public interest and subject to regulatory tests and findings, should be allowed the latitude contemplated in the "free enterprise" system; and (4) the barriers which exist in the form of law or government policy to prevent one form of transportation from engaging in another form should be removed, providing that the proper regulatory authority finds to be in the public interest the participation by a carrier in more than one field of transportation.

Railroad Rates Vex Truckers—Mr. Buhner told the gathering that the trucking industry is opposed to mandatory rate differentials. "On several occasions in the past," he stated, "the railroads have asked the . . . commission to peg truck rates at a level higher than railroad rates on particular movements. Their argument has been that, in these instances, the service rendered by the trucks was superior and that the rails should be allowed to charge a lower rate to offset their natural service disability. We are opposed to any such principle. It is not the function of the . . . commission to use its rate powers to handicap transportation agencies as horses are handicapped in a race."

According to Mr. Buhner, the trucking industry believes that (1) the rates of all transportation agencies should be related to the cost of performing the service; (2) the low-cost agency on particular types of traffic should be allowed to fix the rates; and (3) higher cost agencies should be permitted to meet such rates only if they can do so without incurring out-of-pocket loss.

Mr. Ramspeck declared that the air lines using public facilities could not, under any circumstances, be charged with their full costs, since the air lines are a "very minor user" of those facilities. He said that recent figures show that about 16 per cent of the utilization of airports is by air carrier aircraft.

Mr. Ramspeck conceded that unreliability of schedules is the worst competitive disadvantage the air lines have. He also said that the air lines need release from the "heavy burdens" of regulation, adding that there must be a change of governmental policy so as to give air lines more responsibility for the safety of their operations, and to avoid regulating each detail of their operation. "The government," he went on, "must not import into the industry so much competition that, through dilution of traffic, all the units of the system are weakened. The government undertook the regulation of competition in the industry in 1938, and with it it undertook the responsibility for creating a system which would be successful in good times and bad."

"Latitude for Initiative"—Mr. Schwietert, in urging the preservation of private ownership and management in transportation, warned that the rapid development of highway and air transportation and the revival of water transportation has changed the regulatory problem from one of dealing with a single agency or "practical monopoly" to the regulation of a highly competitive transportation system. "Legislation which recognizes these conditions should be enacted," the N.I.T. League president said. "But there should be no additional encroachment on managerial function. Latitude for the exercise of initiative by management is essential to successful private enterprise."

According to the speaker, a national transportation system in which each agency takes its proper place can be developed and preserved only if there is a fair field for competition between the several agencies. "Government regulation of transportation, to be fair and impartial," he added, "must be placed in the hands of a single agency. . . . The single agency should, however, be established as an independent agency of the government free from political control and responsible only to Congress. . . . To place a regulatory agency in the control of the executive department . . . would destroy consistent logical and impartial interpretation of the several forms of transportation."

Mr. Schwietert charged that a sound national transportation system cannot be developed when the taxpayers pay, not only for the facilities used, but also for the deficits of operation, and in this respect strongly advocated enactment of legislation providing for the sale of the Federal Barge Lines and the liquidation of the I.W.C. At the same time, he called for the passage of the Reed-Bulwinkle bill in order to legalize the functions of rate bureaus.

Rates Can Be Too High—The N.I.T. League president said that while shippers generally agree that carriers must receive adequate compensation for their services, there is frequently raised the question whether the proper way to obtain adequate revenue is by a continuing series of rate increases. There is a fear, he added, that rates will become so high that they will result in reduced rather than increased net revenues and in this connection suggested, as an alternative method of arriving at adequate net income, economies resulting from improved equipment, coordination of services and a greater output per unit of labor. "One of the important factors," he continued, "is the elimination of the so-called featherbed rules. Payment for work not done is economically unsound. In the long run, it will prove detrimental to labor."

According to Mr. Schwietert, labor is in a position to make the greatest contribution towards the solution of present transportation problems. "In rail transportation," he went on, "a car is in the hands of railroad operating employees from the time it is loaded by the shipper until it is placed for unloading at the consignee's place of business. Better performance by labor will result in more efficient, more regular and dependable service to the public. Railroad managements should seek and be given the cooperation of railroad unions. Labor unions could set up ma-

chinery to cooperate with management in the handling of traffic similar to that which has been established by shippers."

During the discussion period which followed Mr. Schwietert's presentation, it was generally conceded that mediation boards, when considering the wage demands of labor, particularly railroad labor, should give more weight to the present and potential revenues of the railroads. It also was held that state public utility and service commissions should act only in advisory capacities, especially with respect to rate decisions handed down by federal regulatory agencies. In this connection, carrier representatives present pointed out that many state commissions have withheld for long periods the application on intrastate traffic of the same rate increases which have been approved for interstate movements.

3 Months Net Income Totaled $72,400,000

Net railway operating income for the same period was $142,646,580

Class I railroads in the first three months of 1948 had an estimated net income, after interest and rentals, of $72,400,000, as compared with $94,400,000 in the corresponding period of 1947, according to the Bureau of Railway Economics of the Association of American Railroads. The three-months' net railway operating income, before interest and rentals, was $142,646,580, as compared with $176,243,935.

Estimated results for March showed a net income of $35,200,000, as compared with $46,200,000 in March, 1947, while the net railway operating income for the 1948 month was $60,724,331, as compared with $73,924,144 in February, 1947. In the 12 months ended with March, the rate of return averaged 3.32 per cent, as compared with 3.04 per cent for the 12 months ended with March, 1947.

Gross in the first three months amounted to $2,243,241,538, compared with $2,040,521,145 in the same period of 1947, an increase of 9.9 per cent. Operating expenses amounted to $1,820,970,544, compared with $1,598,151,546, an increase of 13.9 per cent. Thirty-six Class I railroads failed to earn interest and rentals in the three months, of which 16 were in the Eastern district, three in the Southern region and 17 in the Western district.

In the East—Class I roads in the Eastern district in the three months had an estimated net income of $15,600,000, compared with a net income of $30,400,000 in the same period of 1947. For March, their estimated net income was $9,200,000, compared with $19,000,000 in March, 1947.

Class I Railroads—United States

	Month of March 1948	1947
Tot. oper. rev.	$776,616,109	$718,650,958
Tot. oper. exp.	618,759,345	549,498,640
Oper. ratio—per cent	79.67	76.46
Taxes	82,163,688	81,991,463
Net rail. oper. inc. (Earngs. before chrgs.	60,724,331	73,924,144
Net inc., after chrgs. (est.)	35,200,000	46,200,000
	Three Months Ended March 31, 1948	
Total oper. rev.	$2,243,241,538	$2,040,521,145
Tot. oper. exp.	1,820,970,544	1,598,151,546
Oper. ratio—per cent	81.18	78.32
Taxes	237,223,188	227,004,985
Net rail. oper. inc. (Earngs. before chrgs.)	142,646,580	176,243,935
Net inc., after chrgs. (est.)	72,400,000	94,400,000

The same roads in the three months had a net railway operating income of $48,879,003, compared with $66,363,924 in the same period of 1947. Their net railway operating income in March amounted to $22,698,095, compared with $31,354,922 in March, 1947.

Gross in the Eastern district in the three months totaled $1,025,129,310, an increase of 9.3 per cent compared with the same period of 1947, while operating expenses totaled $859,369,382, an increase of 13.5 per cent.

Class I roads in the Southern region in the three months had an estimated net income of $21,500,000, compared with a net income of $19,000,000 in the same period of 1947. For March, they had an estimated net income of $8,400,000, compared with $7,500,000 in March, 1947.

The same roads in the three months had a net railway operating income of $33,892,793, compared with $31,253,038 in the same period of 1947. Their net railway operating income in March amounted to $12,729,958, compared with $11,949,011 in March, 1947.

Gross in the Southern region in the three months totaled $332,566,680, an increase of 9.1 per cent compared with the same period of 1947, while operating expenses totaled $257,231,320, an increase of 9.7 per cent.

Off in West Too—Class 1 roads in the Western district in the three months had an estimated net income of $35,300,000, compared with $45,000,000 in the same period of 1947. For March, they had an estimated net income of $17,600,000, compared with a net income of $19,700,000 in March, 1947.

The same roads in the three months had a net railway operating income of $59,874,784, compared with $78,626,973 in the same period of 1947. Their net railway operating income in March amounted to $25,296,278, compared with $30,620,211 in March, 1947.

Gross in the Western district in the three months totaled $885,545,548, an increase of 11 per cent compared with the same period of 1947, while operating expenses totaled $704,369,842, an increase of 16.2 per cent above 1947.

Railroads Facing Seizure or Strike?

Judge Douglass suspects hold-out ops expect White House concessions

Following the breakdown of efforts of Chairman Douglas and Member F. A. O'Neill, Jr., of the National Mediation Board to effect last weekend some resolution of the impasse in negotiations in Chicago between the railroads and representatives of three operating brotherhoods with respect to a wage increase and changes in working rules, it appeared that the nationwide strike called for 6 a.m. May 11 by the Brotherhood of Locomotive Firemen & Enginemen, the Brotherhood of Locomotive Engineers, and the Switchmen's Union of North America could be forestalled only by some action of President Truman or Congress.

In announcing the failure of their mediatory efforts on May 4, Mr. Douglass said that there was no hope of bringing the parties together so long as both maintained the positions they had taken with respect to the March 27 recommendations of the emergency board appointed by President Truman to review the "facts" back of the dispute.

These recommendations, previously reported in detail in *Railway Age*, were that several changes in rules sought by the unions, and two proposed by the carriers, be made, and that the three hold-out unions be given a wage

WHITE HOUSE CALLS IN UNION HEADS

When this issue went to press the chief executives of the three hold-out operating unions were scheduled to meet with Dr. John R. Steelman, assistant to President Truman, at the White House at 11 a.m. May 7. This was announced on May 6 by Charles G. Ross, the President's press secretary, who also revealed that Dr. Steelman had taken the initiative in arranging the conference. President D. B. Robertson of the Brotherhood of Locomotive Firemen & Enginemen, who was already in Washington, D. C., agreed to attend and Dr. Steelman got acceptances by telephone from Grand Chief Engineer Alvanley Johnston of the Brotherhood of Locomotive Engineers, who was in Cleveland, Ohio, and President A. J. Glover of the Switchmen's Union of North America, who was in Buffalo, N. Y. The foregoing was all Dr. Steelman had done up to that time, Mr. Ross said. He was unable to say what might be done in the way of inviting management representatives to confer with him.

increase of 15½ cents per hour. The railroads agreed to accept these recommendations, but the unions insisted that they were unsatisfactory and called a strike for a date shortly after the legal "cooling off" period had expired. Mr. Douglass said that these positions of the parties remained unchanged, making it appear most likely on May 4 that the strike would occur.

The uncompromising attitude of the brotherhoods was a result, the N.M.B. chairman declared, of their experiences with President Roosevelt in previous wage controversies, since they had found then that by going over the heads of the Mediation Board and the President's emergency boards or administrators they could obtain from the White House greater concessions to their demands than these agencies recommended. Mr. Douglass expressed the opinion that the unions were employing the same technique in the present case.

On May 5, Messrs. Douglass and O'Neill visited the White House, and it was subsequently stated by Charles G. Ross, Mr. Truman's press secretary, that they had gone over the whole situation leading up to the strike threat with Dr. John R. Steelman, assistant to the President. Dr. Steelman had informed the President of developments, it was said, but no immediate action was planned. Meanwhile it was learned that the President had been advised earlier that seizure of the railroads by the government would be possible under the terms of legislation enacted in 1916 to apply in time of war, though there was, as this issue went to press, no evidence that the President would take such action. From other sources suggestions came that the White House might endeavor to persuade the heads of the hold-out brotherhoods to postpone the strike to allow further negotiations to go on.

In an address in Detroit, Mich., on May 3, President William T. Faricy of the Association of American Railroads declared that, if the strike should take place, the responsibility for the inconvenience and suffering that the American people would experience as a result of the interruption of the operation of the nation's basic transportation system would be squarely on the officers of the striking brotherhoods.

On May 5, President C. McD. Davis of the Atlantic Coast Line stated in an interview that employees of that road had been notified that, if the threatened strike occurred, all operations of the road, freight, passenger, mail and express, would be halted completely and substantially all employees would be furloughed.

Similar notices were given by other railroads, and the public was advised by many lines that embargoes would be placed on freight shipments in advance of the strike date unless the walkout was called off.

Eastern Roads Present Case For Higher Passenger Fares

If the one-half cent a mile increase in coach and Pullman fares requested by the Eastern railroads is authorized by the Interstate Commerce Commission the additional revenue will enable the Pennsylvania to cut its passenger service operating losses from 21 cents per dollar of revenue to 12 cents, Walter S. Franklin, vice-president in charge of traffic, told Commissioner John L. Rogers and Examiner Burton Fuller on May 5, the first day of hearings being held at the Hotel St. George, Brooklyn, N. Y. Mr. Franklin added that he could "produce no other figures to show more clearly the dire need for a further increase in operating revenue from passenger service" and that he was using figures for the Pennsylvania because that road's passenger service is approximately 28 per cent of the total passenger traffic of the eastern roads and therefore indicative of the general picture in the east.

The Pennsylvania executive pointed out that the railroads are doing their utmost to improve their operations and give better service to the public. He said they were not only facing large expenditures for passenger and freight service improvements, but also in making up, as far as possible, maintenance deferred during and since the war and in preparing to meet new demands growing out of the present world situation. "The railroads," he said, "simply do not have the cash to make these expenditures, and unless they have the earnings their credit will undoubtedly be impaired to the extent that it may be difficult to bring their property up to the point where they can render proper and efficient service."

An earnest attempt is being made by the railroads, he continued, to have all services carry their share of the additional load from heavily increased costs even though the percentage of increase in passenger fares is less than for other services. The average increase in passenger fares since 1940 has been 20 per cent, compared with advances of 45 per cent in freight rates, 46 per cent in express rates and 25 per cent in mail pay. If passenger fares are increased as now requested they will still be, on the average, below the level for many years before 1936. The present proposals, Mr. Franklin emphasized, represent the best scale of fares that can be devised by passenger traffic officers to increase passenger service earnings and at the same time hold a large share of the passenger traffic to the railroads.

Dr. Julius H. Parmelee, vice-president of the Association of American Railroads and director of its Bureau of Railway Economics, whose testimony preceded that of Mr. Franklin, presented several exhibits containing statistics relating to revenues, expenses, net earnings, traffic and performance of the Class I railroads in the Eastern district, including the Pocahontas region, for various dates up to the present, upon which the carriers' case was based.

J. D. Haggerty, general statistician of the New York Central, whose testimony was presented on May 6, offered exhibits showing, among other things, the financial results of the Central's operations over the past 12 years and to what extent the road's costs have increased since 1940. F. H. Baird, general passenger traffic manager of the Central, testified that in his opinion if the proposed increases are authorized the Central's passenger revenues will be increased by approximately $21,500,000 annually on the basis of the traffic it is estimated the road will handle in 1948. Revenues last year from passenger traffic totaled slightly over $133,000,000 and it is further estimated that the 1948 passenger revenues, on the basis of the present fares, would be $127,000,000.

Retirement Rule Waived For Colonel Johnson

President Truman has issued an Executive Order exempting Interstate Commerce Commissioner J. Monroe Johnson, who is also director of the Office of Defense Transportation, from the civil service rule requiring government employees to retire when they reach the age of 70 years. Colonel Johnson reached that age on May 5.

While he will continue also as director of O.D.T., the order applies specifically to his continuance as a member of the I.C.C. It authorizes such continuance until he is reappointed or a successor is appointed and qualifies. The colonel has been a member of the commission since May, 1940, and his present term will expire at the end of this year.

Study Group Recommends Review of Retirement Systems

A recommendation that Congress should direct the Social Security Administration and the Railroad Retirement Board to undertake a study to determine the most "practicable and equitable method" of making the railroad retirement system supplementary to the basic old-age and survivors insurance program is embodied in a report which the Senate committee on finance has received from its advisory council on social security. According to the council, benefits and contributions of the railroad retirement system should be adjusted to supplement the basic protection afforded by old-age and survivors insurance, so that the combined protection of the two programs would "at least equal" that under the Railroad Retirement Act.

The council, headed by E. R. Stettinius, Jr., former secretary of state, was set up last year for the purpose of assisting the committee in dealing with legislation relating to social security. It

has been commissioned to make a full and complete investigation of old-age and survivors insurance and all other aspects of the existing social security program, particularly with respect to coverage, benefits and taxes related thereto.

"We believe that the basic differences between the structures of the retirement benefits under old-age and survivors insurance and the Railroad Retirement Act preclude any coordination short of extending old-age and survivors insurance coverage to railroad workers and making the Railroad Retirement Act a supplementary program," the council said of its coordination proposals. "In our opinion, a satisfactory plan can be developed for extending old-age and survivors insurance to all railroad employees and thus strengthening the protection now afforded railroad workers. A report on such a plan should be made to Congress at the earliest practicable date."

Women Railway Employees

Class I railways had 67,448 women employees as of the middle of January, a decrease of 1,038 from the mid-October, 1947, total of 68,486, but the proportion of women employees to total employees increased from 5.05 per cent to 5.12 per cent, according to the latest report on the subject by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

The total of 67,448 women employees as of the middle of January compares with a January, 1947, total of 72,943. The totals of all employees at the same times were 1,317,650 and 1,332,259, respectively.

As compared with mid-October, 1947, there were decreases in the mid-January figures for women employees in all employment groups. The largest drop was in the professional, clerical and general category, for which the mid-January total was 54,099, as compared with a mid-October, 1947, total of 54,894.

There were 6,429 women employed in maintenance of equipment and stores, as compared with 6,565 last mid-October; 6,725, as compared with 6,794, in transportation work other than train, engine and yard; and 135, as compared with 151, in maintenance of way and structures.

Other mid-January tabulations show 15 women in the executive, officials and staff assistants group; 15 among the switchtenders, and 30 in train and engine service.

Locomotive Rules Amended

The Interstate Commerce Commission has modified its rules and instructions for the inspection and testing of locomotives to remove the June 1, 1948, deadline from requirements calling for the installation, on steam locomotives built before March 1, 1946, of specified emergency brake valves, water gages, and equipment for the auxiliary operation of air-operated power reverse gears. These requirements were set out in a January 16, 1946, order which stipulated that the installations be made the first time the locomotives received class 3 or heavier repairs, "but not later than June 1, 1948."

The modifying order, which eliminated that deadline, was dated April 27. It still leaves in effect the 1946 order's requirement that the installations be made the first time the locomotives receive heavy repairs. That order also still requires that steam locomotives built on and after March 1, 1946, be likewise equipped.

Bills in Congress

Additional bills to liberalize the benefit provisions of the Railroad Retirement Act have been introduced in the House by Representative Snyder of West Virginia and O'Hara of Minnesota, Republicans. They are H.R.6631 and H.R.6397.

S.2281, the bill sponsored by Senator Langer, Republican of North Dakota, to provide for an air parcel-post service, has been reported favorably to the Senate from its committee on post offices and civil service. Senator Langer is chairman of the committee.

M.P., Rock Island Each Fined $1,000

The Interstate Commerce Commission has been advised that pleas of *nolo contendere* were entered by the Missouri Pacific and the Chicago, Rock Island & Pacific in the federal district court for the eastern district of Arkansas on April 26 to informations charging those roads with having violated the Elkins Act. Each road was fined $1,000.

The informations charged that the railroads paid an unpublished allowance to two Little Rock, Ark., warehouses on outbound l.c.l. shipments of merchandise loaded into trap cars at the warehouses.

Commission Urges Further Study Of Black Market Ticket Bills

The Interstate Commerce Commission's legislative committee, of which Commissioner Splawn is chairman, has advised the Senate committee on interstate and foreign commerce that it has "no objection in principle" to a bill introduced by Senator Holland, Democrat of Florida, to amend both the Interstate Commerce Act and Civil Aeronautics Act so as to "penalize black marketing of transportation tickets." At the same time, however, the commission said that "further and serious study" should be given the measure, S.2467, which was described in *Railway Age* of April 17, page 60. An identical bill, H.R.6164, has been introduced in the House by Representative Lea, Democrat of California.

With respect to the provision which would make it unlawful for any person to pay more than the published rate for tickets covering transportation or other accommodations, the commission commented that to penalize the passenger, "who is usually the victim of the exaction," would "seem to be going too far, since usually he is an unwilling victim and does not invite the exaction."

As for that provision which would fix a limit of $1 for service charges in connection with the procurement of a ticket—unless the procurer gives a detailed receipt showing the amount paid for the ticket and the service charges—the commission recommended that it be clarified in order to remove the doubt as to whether the provision is intended to permit a charge of more than $1 if the person involved has incurred greater expense in performing the service.

The commission also commented on another provision which would require carriers to cancel reservations not paid for "for three hours within the 24 hours immediately preceding the transportation for which the tickets, if paid for, would entitle the holder thereof." The effect of the provision as to the time when such cancellation shall be made appears uncertain, it said, adding that the "best interpretation" would seem to be that a reservation made for a train leaving within 24 hours must be picked up and paid for within three hours after it is made, or cancellation will result. As for a provision under which carriers would be forbidden to redeem for more than 90 per cent of the original price those tickets presented for refund within the 24-hour period, the commission observed that the present Pullman tariff provides for forfeiture of the amount paid for the space reserved except where the space is wholly or in part occupied during the journey by another person, in which event, whole or partial refund will be made.

The committee also suggests that, except for the limited number of trains on which coach seats are reserved, there would be no need for applying the bill to tickets covering transportation, for "assuredly no person would pay for the railroad ticket more than the rate established . . . nor would any such tickets be reserved."

Money for Air Transport

Appropriations totaling $100,482,660 for the Civil Aeronautics Administration during the fiscal year ending June 30, 1949, were carried in the Department of Commerce appropriation bill as it was passed recently by the Senate. This increase of $112,660 above the amount approved by the House is among other differences between the two versions of the bill which are now before a Senate-House conference committee for reconciliation.

The $112,660 was added by the Senate to the proposed appropriation for the establishment of additional air-navi-

gation facilities, making the total for that item $10,211,660 as compared with the $10,099,000 approved by the House. In this connection, both versions of the bill authorize C.A.A. to enter contracts involving commitments to spend another $12,000,000 for the establishment of such facilities.

The Senate also restored to $37,000,000 the amount of contract authorizations proposed in connection with the federal-aid airport program, for which the bill carries a proposed appropriation of $3,000,000. The $37,000,000 had been cut to $34,392,000 by a House amendment which was designed to prevent use of any airport-program funds for development of the so-called Fort Worth International Airport (see *Railway Age* of March 13, page 98).

F. G. Gurley, Santa Fe President, Re-Elected to C. of C. Board

F. G. Gurley, president of the Atchison, Topeka & Santa Fe, has been re-elected to the board of directors of the Chamber of Commerce of the United States. During his new term Mr. Gurley will represent the chamber's Transportation and Communication Department Committee, having formerly served as a director-at-large.

Shippers' Service Bureau Established by F. R. P.

The Federation for Railway Progress has established a shippers' service department designed to enable shippers to voice to railroad executives their criticisms, comments and suggestions concerning the freight service they receive, it was announced on May 3 by Robert R. Young, federation chairman. Charles W. Tighe, of Litchfield, Conn., for the past three years traffic manager for the Warren McArthur Corporation, manufacturers of transportation seating, will head the new department from headquarters in the federation's Cleveland, Ohio, offices.

The service of the new department will be similar to that offered by the federation's passenger relations department, which has processed more than 1,300 passenger comments since it was established. A. L. Buxton, president of Kentucky Chemical Industries, Inc., Cincinnati, Ohio, represents the shippers' group on the federation's executive council. The announcement added that the federation now has over 15,000 members, including 260 corporations who are either shippers or railroad suppliers.

Colonel Barber, C. of C. Transport Officer, to Retire on June 1

Colonel A. B. Barber, manager of the Transportation and Communication Department of the Chamber of Commerce of the United States for the past 25 years, will retire on June 1. This was announced April 28 by E. A. Nash, chairman of the department committee, at the transportation session held in conjunction with the 36th annual meeting of the chamber, as noted elsewhere in this issue.

1947 Fourth-Quarter Loading Estimates 5.1 Per Cent Low

The 13 Shippers Advisory Boards underestimated carloadings for the fourth quarter of 1947 by 5.1 per cent, according to the latest comparison of forecasts with the actual loadings, issued by W. C. Kendall, chairman of the Car Service Division of the Association of American Railroads. The variations by individual boards ranged from an overestimate of 6.8 per cent to an underestimate of 19.7 per cent, while the variations by commodities ranged from an overestimate of 26.4 per cent in the case of citrus fruits to an underestimate of 87.1 per cent in metals, other than iron and steel.

The report shows that there were overestimates in 11 commodity groups and underestimates in 21. In addition to citrus fruits, there were overestimates of 19.1 per cent in agricultural implements and vehicles, other than automobiles; 19 per cent in poultry and dairy products; 17.9 per cent in fresh fruits, other than citrus fruits; and 15.5 per cent in livestock. Among the larger underestimates were 85 per cent in chemicals and explosives; 53.5 per cent in paper, paper board and prepared roofing; and 27.5 per cent in cotton seed, soybean-vegetable cake and meal, except oil.

The report also showed that the carloadings were overestimated in three board districts and underestimated in 10.

Comparison National Forecast with Actual Carloadings—Fourth Quarter 1947

Board	Carldgs.4thQtr.1947 Est.	Act.	Perc't. Ov.Es.	Accur. Un.Es.
Cent. West.	332,955	334,943		0.6
Pac. Coast	412,080	384,110	6.8	
Pac. Nw.	267,814	271,523		1.4
Grt. Lakes	517,382	563,275		8.9
Ohio Valley	989,865	1,088,258		9.9
Mid-West	972,137	1,007,147		3.6
Northwest	605,075	591,870	2.2	
Trans-Mo-Kansas	407,731	444,009		8.9
Southeast	952,745	949,489	0.3	
Southwest	544,097	607,894		11.7
New Eng.	127,670	152,804		19.7
Atl. States	791,851	897,546		13.3
Allegheny	1,164,077	1,204,404		3.5
Total	8,085,479	8,497,272		5.1

Gas Turbine for Electric Utility

The first gas turbine for an electric utility in this country is under construction at the General Electric Company's Schenectady Works. It is scheduled for shipment to the Oklahoma Gas & Electric Co., Oklahoma City, Okla., early in 1949.

The turbine, which is rated 4,800 hp., is gas-fired and will be installed in an extension to the present power station. It will be operated on natural gas which is available in abundance in the area. The waste heat from the exhaust will be used with a separate heat exchanger to supplement the present boiler feedwater heating system. This will result in additional kilowatt output from the station by releasing part of the heating load from the present installed equipment.

The turbine will be geared to a conventional 3,600-r.p.m. totally enclosed generator with direct connected exciter. The only water required in the operation of the plant will be a small quantity for cooling the bearing lubricating oil and for cooling the a.c. generator.

A.A.R. Board Meeting

The regular monthly meeting of the board of directors of the Association of American Railroads was held in Washington, D. C., on May 7, but it was stated after the session that a quorum was not present and thus no action was taken. Proceedings were general discussions of the railroad situation, including the pending strike threat of the three holdout operating unions. Director J. Monroe Johnson of the Office of Defense Transportation attended the meeting.

New Haven Extends Period of Old Colony Passenger Service

The New York, New Haven & Hartford has agreed to comply with the request of Robert F. Bradford, governor of Massachusetts, that the road not discontinue operations of the Old Colony division passenger service before March 1, 1949, according to Howard S. Palmer, president of the New Haven (see *Railway Age* of March 13, page 91).

Governor Bradford and his attorney general had advised the road's board of directors it is impossible between now and next October 1, the date originally set for discontinuation, to enact the necessary legislation to provide a substitute for the unprofitable Old Colony passenger service which the New Haven had elected to discontinue under a provision of its plan of reorganization.

House Committee Would Limit Bulwinkle Bill to Rate Pacts

The House committee on interstate and foreign commerce has decided to sponsor a Bulwinkle-bill amendment which would limit carrier agreements eligible for that measure's grant of immunity from anti-trust laws to those "relating to rates, fares, classifications, divisions, allowances, or charges (including charges between carriers and compensation paid or received for the use of facilities and equipment), or rules and regulations pertaining thereto, or procedures for the joint consideration, initiation or establishment thereof." In thus excluding agreements relating to service, the amendment would reshape the bill along lines suggested by Chairman Robert R. Young of the Chesapeake & Ohio and other representatives of that road and the Federation for Rail-

way Progress, of which Mr. Young is also chairman.

In its present broader form, the bill (H.R.221) has remained on the House calendar since it was reported favorably by the committee last July. The new amendment will be proposed by the committee when the measure comes up for House consideration, which is now expected to be sometime this month. Representative Bulwinkle, Democrat of North Carolina, is sponsor of the bill. Meanwhile, the Senate has already passed the similar anti-trust-relief bill (S.110) sponsored by Senator Reed, Republican of Kansas (see *Railway Age* of June 21, 1947, page 1252).

Report Bill Carrying I.C. Act Amendments Sought by I.C.C.

The Senate committee on interstate and foreign commerce has filed with the Senate its favorable report on S.2426, the bill introduced by Senator Reed, Republican of Kansas, to amend various provisions of the Interstate Commerce Act as recommended by the Interstate Commerce Commission. A similar bill, H.R.5623, is pending before the House as noted in *Railway Age* of March 27, page 69, and of April 3, page 58.

Emergency Board Reports On Express Agency Case

Withdrawal of the union's demand for a reduction of the work week from 44 hours in six days to 40 hours in five days, but a partial granting of its demand for more liberal paid-vacation arrangements, have been recommended by the emergency board which President Truman appointed recently to investigate a dispute between the Railway Express Agency and the International Brotherhood of Teamsters, American Federation of Labor, as representative of R.E.A. employees in several large cities other than New York. The board made its report to the President on April 30.

The work-week and vacations issues were among 49 originally involved in the controversy, but the board reported that the other 47 were adjusted by agreement of the parties while it had the case under consideration. With respect to paid vacations, the board recommended that six working days annually be granted to employees after one year of service, and 12 working days after five years of service. This would be retroactive to January 1, 1947, and it compares with present arrangements which provide for annual vacations of six working days after one year of service, nine working days after 10 years of service, and 12 working days after 15 years of service or more. The union had demanded paid vacations ranging from 10 working days after one year of service to 25 working days after 15 years of service or more.

The dispute involved about 3,200 R.E.A. vehicle employees in Chicago, Cincinnati, Ohio, Cleveland, Newark, N. J., Philadelphia, Pa., St. Louis, Mo., and San Francisco, Cal. Members of the board were Chairman John A. Lapp of Chicago, John D. Galey of Sweet Home, Ore., and John T. McCann of New York.

Senators Protest Increase In Waterway Appropriations

Three members of the Senate committee on appropriations have protested against that committee's action in recommending increases totaling more than $100 million in appropriations approved by the House for the rivers and harbors and flood control work of the Army's Corps of Engineers during the fiscal year ending June 30, 1949. The protest was embodied in a minority report on the War Department civil functions appropriation bill which the committee reported recently to the Senate, the dissenters being Senators Bridges of New Hampshire, chairman of the committee, Reed of Kansas and Ferguson of Michigan, all Republicans.

The majority committee report recommended an increase of $43,253,100 in the amount approved by the House for rivers and harbors work. This would bring that item up from $151,831,300 to $195,084,400. The proposed increase in flood-control funds is $58,124,800, which would bring that item up to $444,656,800. The minority report said such appropriations would be "inimical to the interest of national economy," and that the three dissenting senators proposed to offer a motion on the floor of the Senate to recommit the bill to the committee with instructions to reduce the aggregate of the proposed appropriations "by not less than $200,000,000."

Amounts added by the Senate committee for rivers and harbors projects include $1,500,000 for work on the proposed Tennessee-Tombigbee waterway; $2,128,000 for the Sacramento river; an additional $2,000,000 for the Mississippi and another $1,500,000 for the Missouri; another $7,000,000 for the McNary lock and dam on the Columbia river, bringing the bill's total allowance for that project to $27,000,000; $4,150,000 for the Morgantown lock and dam on the Monongahela; $2,200,000 for the Overton-Red River waterway; an additional $1,570,700 for the Intracoastal waterway; and an additional $3,450,000 for maintenance, operation and care of existing waterways, and for "examinations, surveys and contingencies."

The committee minority issued a May 2 statement saying that the bill, as reported, puts the Senate "on trial before the bar of public opinion." The statement went on to point out that Congress early this year adopted a resolution which pledged that appropriations proposed in President Truman's budget for fiscal 1949 would be reduced two billion dollars. Then came the suggestion that the present bill would be a good place to make a substantial showing in the way of keeping that pledge.

"No appropriation bill, of which we have knowledge, has a greater degree of appropriations flexibility than the one herein discussed," Messrs. Bridges, Reed and Ferguson had said in their report. They proceeded to criticize the approach of the Army engineers, saying that the latter requested "complete restoration of every dollar" which the House had cut from the President's budget estimates. "Good and bad, important and inconsequential, large and small, the Army engineers submitted their requests to the committee—and offered their justification with a straight face," the report added.

Railroad Suppliers Plan Large Joint Exhibit at Chicago Fair

Plans were revealed at Chicago this week for possible presentation of a $300,000 institutional railroad supply exhibit at the Chicago Railroad Fair, July 20 to September 6, inclusive. It would be sponsored by 100 or more suppliers of railroad equipment, but would not preclude individual displays by suppliers, either in the tent area already set aside for that purpose or elsewhere on the fair grounds. The combined lay-out would be centrally located in the fair area and housed in a Quonset-type structure measuring 300 ft. by 24 ft.

The supply exhibit would be wholly institutional in character, with no particular products identified. However, each sponsoring company and its services to the railroads would be given recognition. Further credit would be given in a souvenir booklet describing the exhibit and listing the sponsors, which would be distributed during the fair.

The story of the suppliers would be told by means of animated figures whose lip movements are synchronized with a sound unit. In addition, models, dioramas and other display media would be employed to illustrate the part played by the suppliers in the efficient operation of the railroads.

Negotiations are now underway between prospective sponsors and the fair management, and it is expected that a definite decision concerning the exhibit will be reached early next week.

Freight Car Loadings

Loadings of revenue freight in the week ended May 1 totaled 891,638 cars, the Association of American Railroads announced on May 6. This was an increase of 39,329 cars, or 4.6 percent, above the previous week, an increase of 9,064 cars, or 1 per cent, above the corresponding week last year, and an increase of 220,327 cars, or 32.8 per cent, above the equivalent 1946 week, when loadings were seriously affected by coal-mine labor troubles.

Loadings of revenue freight for the week ended April 24 totaled 852,309 cars,

and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

For the Week Ended Saturday, April 24	1948	1947	1946
District			
Eastern	155,879	165,980	135,774
Allegheny	177,083	190,958	126,103
Pocahontas	61,834	74,450	21,588
Southern	141,679	140,658	116,775
Northwest.	125,806	127,976	90,942
Cen. West.	120,890	128,058	108,789
Southwest.	69,138	65,632	60,293
Tot. West. Dis.	315,834	321,666	260,024
Tot. All Rds.	852,309	893,712	660,264
Commodities:			
Grain and gr. products	38,739	47,628	33,096
Livestock	15,964	15,678	19,382
Coal	176,468	184,159	31,246
Coke	10,671	14,286	6,424
Forest prods.	44,631	47,563	45,315
Ore	78,100	68,744	20,813
Mdse. l.c.l.	110,960	125,838	129,034
Misc.	376.776	389,816	374,954
April 24	852,309	893,712	660,264
April 17	785,668	865,844	650,843
April 10	683,852	757,839	649,298
April 3	661,807	715,159	643,644
March 27	664,375	829,392	809,142
Cumulative total, 17 weeks	12,840,019	13,750,287	12,337,028

In Canada. — Carloadings for the week ended April 24 totaled 74,587 cars as compared with 74,657 cars for the previous week and 76,033 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Tot. Cars Rec'd from Connections
Totals for Canada:		
April 24, 1948	74,587	35,441
April 26, 1947	76,033	38,507
Cumulative totals for Canada:		
April 24, 1948	1,230,452	610,327
April 26, 1947	1,171,779	636,577

Re-Equipped "Riley"—A Correction

The builders of some of the cars in the New York Central's re-equipped "James Whitcomb Riley" were incorrectly designated on page 66 of the April 24 *Railway Age*. The Budd Company built the two dining cars and the observation-lounge car, the Pullman-Standard Car Manufacturing Company built the seven coaches, and the combination baggage car and coach was built by the American Car & Foundry Co.

N. & W. Starts Ad Campaign To Acquire New Industries

An advertising campaign designed to bring new industries to the six-state territory served by the Norfolk & Western was launched last week. The program, now mapped through 1948, includes numerous full-page insertions—many in four colors—in eight national magazines, weekly quarter-page advertisements in two leading financial dailies, and frequent mailing of literature to some 25,000 top industrial executives throughout the country.

N. Y. C. Gets Budd-Built Parlor-Observation Cars

The New York Central this week accepted delivery of two stainless steel parlor-observation cars from the Budd Company. The cars, each of which cost $100,000, will operate exclusively between Buffalo, N. Y., and New York on the eastbound "Missourian" and the westbound "Knickerbocker." Decorated with pastels and walnut wood veneers, the new cars, the first of a group of 13 ordered in 1945, have panoramic windows with venetian blinds. They are furnished with 30 deep-cushioned armchairs in the parlor section and 10 lounge seats in the observation end. Special compartments for luggage and overcoats are provided at the forward end.

Army Railroad Equipment to Be Exhibited at Chicago Fair

At least seven types of railroad vehicles employed by the army will be on display at the Chicago Railroad Fair, July 20 to September 6. The equipment will include a 127-ton military Diesel locomotive, a hospital car, an ordnance gun car, a machine shop car and a hospital kitchen car. In addition, a German locomotive and a military transport car captured during the war will be exhibited. The Transportation Corps also proposes to display a model of a military embarkation port.

ORGANIZATIONS

At the annual election held by the **Traffic Club of St. Louis** (Mo.) at the Statler Hotel, April 27, the following officers were elected for the ensuing year: President—Oris A. Vinyard, acting general freight agent, Southern; first vice-president—C. S. J. Flood, traffic manager, Anheuser-Busch, Inc.; second vice-president—James J. Gleeson, district freight agent, Louisville & Nashville; and third vice-president—John B. Creen, director of transportation, Granite City Steel Co.

L. W. Horning, vice president and head of personnel of the New York Central system, on May 13 at 8:15 p.m. will address the **Women's National Republican Club**, 3 West 51st street, New York, on "The Place of Railroads in Our National Economy." Mrs. Kay Cavender, public relations representative for the Budd Company, will speak on "Railroads—How Much Promise? How Much Performance?"

A meeting of the **Eastern Car Foreman's Association** has been scheduled for May 14, 8 p.m., at the Engineering Societies Building, 29 West 39th Street, New York. Francis B. Rykoskey, supervisor of shops of the Baltimore & Ohio, will present a paper entitled "Modern Wheel Shop Performance."

The **Northwest Locomotive Association** will hold its annual meeting and election of officers on May 24, at 8 p.m., at Colonial Hall, 574 Wabasha St., St. Paul, Minn.

The next meeting of the **Railway Club of Pittsburgh** will be held at the Fort Pitt Hotel, Pittsburgh, on May 27 at 8 p.m. R. P. Forsberg, consulting engineer, will present a paper.

EQUIPMENT AND SUPPLIES

M. P. Authorized to Spend $19,831,600 for Equipment

The Missouri Pacific Lines have been authorized by the district court at St. Louis, Mo., to purchase 45 Diesel-electric locomotives costing $11,166,600, and 1,000 70-ton hopper cars and 1,000 70-ton, 52½-ft. gondola cars costing an estimated $8,665,000. Twenty-three of the locomotives will be assigned to the M.P. as follows: 10 1,000-hp. switchers for service at Kansas City, Mo., replacing the present steam coal-burning locomotives now in use; eight three-unit 4,500-hp. freight locomotives for through freight service between Osawatomie, Kan., and Little Rock, Ark., on the road's Southern Kansas and Central divisions; one two-unit 3,000-hp. locomotive for service between Alexandria, La., and Houston, Tex.; and four two-unit 4,000-hp. passenger locomotives, three of which will be assigned to the St. Louis-Texas run and one to the run between Little Rock and Lake Charles, La. The hopper cars also will be assigned to the M.P. The Gulf Coast Lines and the International-Great Northern, M.P. subsidiaries, will receive eight 3,000-hp. freight, two 4,500-hp. freight, four 1,500-hp. switching and eight 1,000-hp. switching locomotives. The gondola cars will be alloted in equal amounts to the G.C.L. and the I.-G.N.

SIGNALING

The **Baltimore & Ohio** has ordered equipment from the General Railway Signal Company for an all-relay electric interlocking to be installed at Bond Hill, Ohio. The control machine will have a 15 by 27-in. panel equipped with 11 track indication lights and 10 miniature levers for the control of 7 switch machines and 7 signals at a junction point. Equipment ordered includes Type-K relays, Model-5C electric switch machines and Type-U color-position-light signals.

The **Chesapeake & Ohio** has placed an order with the Union Switch & Signal Co. covering the necessary materials required for an all-relay interlocking at Millard avenue, Toledo, Ohio. The materials will include a five-foot Style-C

control machine, M-22A dual-control electric switch movements, color-light dwarf signals, relays and transformers. The installation work will be handled by railway forces.

The **Nashville, Chattanooga, & St. Louis** has placed an order with the Union Switch & Signal Co. covering the necessary materials for the remote control by code of the Oak Street interlocking, Nashville, Tenn., involving a 2-ft. 6-in. control machine located at South End tower, Style-M-2 electric switch movements, color-light signals, all necessary code equipment, line and track circuit apparatus. The field installation will be handled by railway forces.

FREIGHT CARS

The **Norfolk & Western** has ordered 100 70-ton covered hopper cars from the Greenville Steel Car Company at an approximate total cost of $750,000. Delivery is expected during the fourth quarter of the current year.

PASSENGER CARS

The **Wabash** has ordered six sleeping cars of the 4 double bedroom-12 roomette type from the American Car & Foundry Co. The cars, which are in addition to four previously ordered (see *Railway Age* of May 25, 1946, page 1080), will be built at the St. Charles, Mo., plant.

SUPPLY TRADE

Arthur J. Loughren, assistant general sales manager of the primary battery division of **Thomas A. Edison, Inc.,** has retired after 37 years of continuous

Arthur J. Loughren

service with that company. Mr. Loughren entered railroad service on June 1, 1893, as a batteryman on the Mohawk division of the New York Central, and later was advanced to maintainer and then to signal foreman on the Syracuse and Hudson divisions. In November, 1903, he was appointed assistant signal supervisor on the Hudson division and, from 1906 to 1911, was signal supervisor on the Harlem, Hudson and Syracuse divisions. He joined the primary battery division of Thomas A. Edison, Inc., on May 1, 1911 and subsequently was appointed assistant general sales manager.

Walter E. Harvey has been appointed director-product development and research of the **John C. Dolph Company,** to supervise a new research program.

Walter E. Harvey

Mr. Harvey was graduated from Pennsylvania State College in 1932, with a B. S. degree in chemical enginering and, from the University of Pennsylvania, in 1933, with an M. S. degree in science and chemistry. For the past nine years he has been employed by a manufacturer of insulating varnish.

R. E. Trapeur and **Richard Reimer** have joined the **Federal Telephone & Radio Corp.,** an associate of the International Telephone & Telegraph Corp., to represent the company's mobile radiotelephone division in Southern California.

Dana R. Cornell, vice-president in charge of manufacturing of the **Standard Forgings Corporation,** has been elected a director to succeed **Charles R. Lewis,** a vice-president of the company, and **Arthur F. Reu,** formerly assistant vice-president, has been elected vice-president.

H. B. Ellis, assistant to vice-president of **General Motors Corporation** and former service manager of the firm's **Electro-Motive Division** at La Grange, Ill., has retired. Mr. Ellis joined the service department of Electro-Motive in 1926, after 15 years in the service departments of the White Motor Company and the Cleveland Tractor Company. He was appointed assistant service manager of Electro-Motive in 1928, advancing to service manager in 1930 and to director of parts and service in 1944. He has served as assistant to vice-president of G.M.C. since October, 1946.

Robert J. Passani has been appointed assistant to the president of the **Deems Supply Corporation.** Mr. Passani was

Robert J. Passani

graduated from the University of Vermont in 1925 and, before joining Deems Supply, was sales director for the Tempil Corporation of New York.

Maynard B. Terry has been appointed general sales manager of the American Brakeblok division of the **American Brake Shoe Company.** Mr. Terry, form-

Maynard B. Terry

erly manager of equipment sales, has served in various sales capacities since joining the company in 1943. In his new position, he will continue to be located at the division's headquarters in Detroit.

Elmer Layden, formerly assistant to president of the Shippers' Car Line Corporation (subsidiary of the American Car & Foundry Co.) and special representative of A.C.F., with headquarters at Chicago, has joined the **General American Transportation Corporation** in that city, as sales representative. Mr. Layden, who became nationally

known as a football player and later as a coach, served for several years as commissioner of the National Professional Football League.

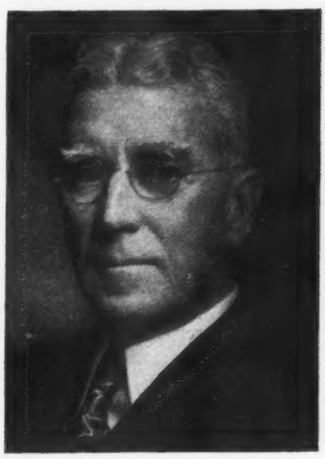
Fred A. Poor, whose election as chairman of **Poor & Co.,** at Chicago, was reported in *Railway Age* of May 1, was born on April 16, 1870, at Andover, Me., and attended grammar and high schools at Port Chester, N. Y. Mr. Poor began his career in 1887 as a clerk and extra agent for the Adams Express Company in New England, and remained with that firm until 1892, when he went to Chicago. He served as a clerk with the Hall Signal Company from 1892 to 1893, and engaged in signal work with the Illinois Central from the latter year until 1900. Mr. Poor later served as a salesman for the Webber Rail Joint Company, and,

Fred A. Poor

when that firm was absorbed by the Rail Joint Company, Inc., he continued as a salesman for the latter. He also served for a time as manager of the Rail Joint Company in London, England. In 1906 Mr. Poor organized the Railway Specialty & Supply Co., primarily to market a successful rail anticreeper which he invented. It later became known as the P. & M. rail anticreeper. The name of the company was changed in 1914 to the P. & M. Company, with Mr. Poor as president. Poor & Co. was organized in 1928 to take over the P. & M. Co. and a number of subsidiary companies then owned by the latter. Mr. Poor was serving as president of Poor & Co. at the time of his election as chairman.

Jim Rogers has been appointed southwestern sales representative for **Samuel Moore & Co.,** with headquarters at Corsicana, Tex.

Philip W. Moore, whose election as president of **Poor & Co.,** at Chicago, was reported in *Railway Age* of May 1, was born on October 18, 1880, at Brookline, Mass., and received his higher education at the Massachusetts Institute of Technology, having been awarded a B. S. degree as mechanical engineer in 1901. He began his career in that same year in the engineering and sales department of the Pennsylvania Steel Company, and in 1906 he joined the Railway Specialty & Supply Co. at Chicago, as general manager. When that firm became the P. & M. Co. in 1914, Mr. Moore became its



Philip W. Moore

vice-president. In 1928 he became first vice-president of Poor & Co., which was organized to take over P. & M. Co. and its subsidiaries. Mr. Moore was serving in the latter capacity at the time of his election as president. He is a former president and director of the National Railway Appliance Association.

H. S. Hagan, manager of works at the Hammond (Ind.), plant of the **Pullman-Standard Car Manufacturing Company,** has been appointed acting manager of the firm's plant at Butler, Pa., succeeding **R. M. Fox,** who has been granted a leave of absence.

John A. Slenker, assistant general superintendent of the Duluth (Minn.) works of the **American Steel & Wire Co.,** a subsidiary of U. S. Steel Corporation, has been appointed general superintendent, succeeding the late **F. J. Martin.**

William S. Saylor, manager of sales of the **Carnegie-Illinois Steel Corporation** (subsidiary of **U. S. Steel Corporation**), at Cleveland, Ohio, has been appointed manager of the district sales office at Detroit, Mich. He succeeds **Francis C. Hardie,** who has been assigned other duties with the company at Pittsburgh, Pa. Mr. Saylor is suceeded by **James T. O'Connor.**

Arthur F. Reum, assistant vice-president of the **Standard Forgings Corporation,** at Chicago, has been elected vice-president—sales department.

The **American Steel & Wire Co.** (a subsidiary of the **U. S. Steel Corporation**) has announced the following personnel changes: **Lawrence F. Black,** superintendent of the engineering and maintenance department at Duluth, Minn., appointed assistant chief engineer, and **Charles B. Hull** appointed assistant division engineer of construction.

The **Morton-Gregory Corporation** has announced the purchase of the manufacturing assets and patent interests of the Nelson Stud Welding Corporation of Lorain, Ohio, and its associated companies.

Francis M. Gunn, assistant to president of the **Pullman-Standard Car Manufacturing Company,** and **R. W. Higgins,** accounting consultant of the firm, both with headquarters at Chicago, have retired after 56 years of service each with Pullman-Standard.

OBITUARY

Rudolf M. Ostermann, who retired on November 1, 1946, as vice-president of the Superheater Company, at Chicago, died in his sleep at his home in that city on May 5.

F. J. Martin, general superintendent of the Duluth (Minn.) works of the American Steel & Wire Co. (subsidiary of the U. S. Steel Corporation), died recently.

Allan E. Goodhue, vice-president and a director of the Chicago Pneumatic Tool Company, at New York, died on April 20, following a short illness.

CONSTRUCTION

Atlantic Coast Line.—Division 4 of the Interstate Commerce Commission has authorized this company's wholly owned subsidiary, the Virginia & Carolina Southern, to construct and operate a 2-mile branch near Lumberton, N. C., to serve a new power plant. The cost of the line is estimated at $106,920, which is to be financed to the extent necessary by a cash loan by the Atlantic Coast Line.

Canadian National.—A contract has been awarded by this company to Swanson, Benson Company of Winnipeg, Man., for the erection of a 10,000-ton ice house at the road's yards in Transcona, Man.

Chicago & Illinois Midland.—This company has awarded a contract to the Gould Construction Company of Davenport, Iowa, for the reconstruction of its bridge over Horse creek, near Pawnee, Ill. The cost of the job is estimated at $150,000.

Chicago, Rock Island & Pacific.—This company plans to relocate 4.6 mi. of main line track at Numa, Iowa, to eliminate curves having a combined central angle of 193 deg. Bids have been asked for the grading and culvert work

in connection with the project, the cost of which is estimated at $495,000. The track work will be performed by company forces.

The Rock Island will also install 75.5 mi. of centralized traffic control between Culver, Iowa, and Eldon, to replace automatic block signals now in service. Cost of the project, the work on which will be carried out by company forces, has been estimated at $285,000.

This company has awarded a contract to N. F. English, of Hutchinson, Kan., for the construction of a brick passenger station, 26 ft. by 106 ft., at Dalhart, Tex. The structure will cost approximately $68,700.

Duluth, Missabe & Iron Range.—At the request of the applicant, the Interstate Commerce Commission has extended from May 1 to July 1 the time within which this road will be required to complete the construction of a 27.8-mile extension to its so-called Wales branch, starting from a point near Whyte, Minn.

CAR SERVICE

I.C.C. Service Order No. 775, which provides for super-demurrage charges on freight cars, has been reissued as Revised Service Order No. 775. The revised order, effective from May 1 until October 1 unless otherwise modified, provides that demurrage charges on all types of freight cars, except those not suitable for interchange when used in interplant or intraplant service, shall be $3.30 per car per day, or fraction thereof, for the first two days after expiration of free time, and $5.50 per car per day, or fraction thereof, for each succeeding day. The order exempts cars containing import, export, coastwise or intercoastal bulk freight or explosives traffic when held in cars at ports for transshipment. The superseded order had provided for demurrage charges on tank cars running up to $16.50 per day.

I.C.C. Service Order No. 814, effective from April 30 until July 31 unless otherwise modified, requires the Bingham & Garfield to permit joint use of its terminals and portions of its line by the Denver & Rio Grande Western; and requires the latter to serve specified points on the B.&G. The order is designed to meet conditions arising as a result of an embargo placed by the B.&G. in connection with plans to abandon its line.

I.C.C. Service Order No. 87, which fixes the free time allowed on coal and coal products at North Atlantic ports, has been modified by Amendment No. 13, which provides that excess debits, accrued in the settlement periods ended March 1 and May 1, may be offset by credits accruing at the same point to the same consignor or consignee in the settlement period ending July 1. This relief has been granted because of weather conditions which interfered with the unloading of cars during the settlement period ended March 1 and the light volume of coal handled during the current settlement period as a result of the miners' strike.

I.C.C. Service Order No. 781, which restricts the number of reconsignments on cars of hay, has been modified by Amendment No. 1, which set back the expiration date from April 30 until October 15.

I.C.C. Service Order No. 811-B vacated, as of April 30, Service Order No. 811 which had required railroads to reduce coal-burning locomotive mileage in freight service during the period of the recent strike of bituminous coal miners. The order had been under suspension since April 13.

The Office of Defense Transportation on April 29 issued General Order ODT 69, Revocation, revoking as of April 30 General Order ODT 69, which had required railroads to reduce coal-burning locomotive mileage in passenger service during the period of the recent miners' strike. The order had been under suspension since April 13.

The Office of Defense Transportation on April 27 issued Special Allocation Order ODT R-3, Revocation, revoking Special Allocation Order ODT R-3, Revised, which set up last winter's arrangements for the allocation of tank cars to give spot relief in distressed areas for critically needed fuel oils.

FINANCIAL

Grand Trunk Western.—*New Director.*—Carl W. Bonbright, president of the General Foundry & Manufacturing Co., at Flint, Mich., has been elected a director of this road.

Average Prices Stocks and Bonds

	May 4	Last week	Last year
Average price of 20 representative railway stocks	52.64	52.41	46.29
Average price of 20 representative railway bonds	88.38	88.77	88.62

Dividends Declared

Chestnut Hill.—75¢, quarterly, payable June 4 to holders of record May 20.

Chicago, Burlington & Quincy.—$3.00, payable June 28 to holders of record June 15.

Chicago South Shore & South Bend.—25¢, quarterly, payable June 15 to holders of record June 1.

Cleveland & Pittsburgh.—4% guaranteed, 50¢, quarterly; 7% guaranteed, 87½¢, quarterly, both payable June 1 to holders of record May 10.

Delaware & Hudson.—$1.00, quarterly, payable June 21 to holders of record May 28.

Norfolk & Western.—75¢, quarterly, payable June 10 to holders of record May 12.

Pittsburgh, Bessemer & Lake Erie.—6% preferred, $1.50, semi-annually, payable June 1 to holders of record May 15.

Reading.—4% non-cum, 1st pfd., 50¢, quarterly, payable June 10 to holders of record May 20.

Southern.—75¢, quarterly, payable June 15 to holders of record May 14.

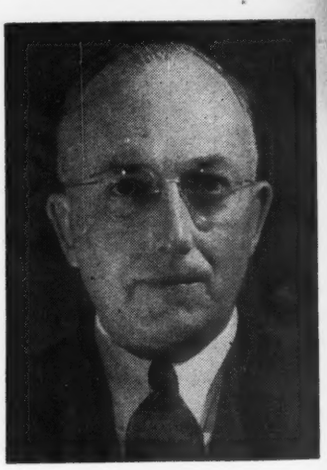
ABANDONMENTS

Chicago, Indianapolis & Louisville.—This company's modified plan for relocation of its line between Armour, Ind., and Lowell has been approved by Division 4 of the Interstate Commerce Commission in a supplemental order in the Finance Docket No. 15702 proceeding. The modified plan contemplates the relocation of only the 4-mile section between Armour and Creston, and the present order amends the previously granted abandonment and construction certificates to confine their application to that section. The original plan, noted in *Railway Age* of April 16, 1947, contemplated abandonment of the entire Armour-Lowell line of 6.65 miles and construction of a new 6.71-mile line between those points.

RAILWAY OFFICERS

EXECUTIVE

Willis T. Pierson has been appointed vice-president and general counsel of

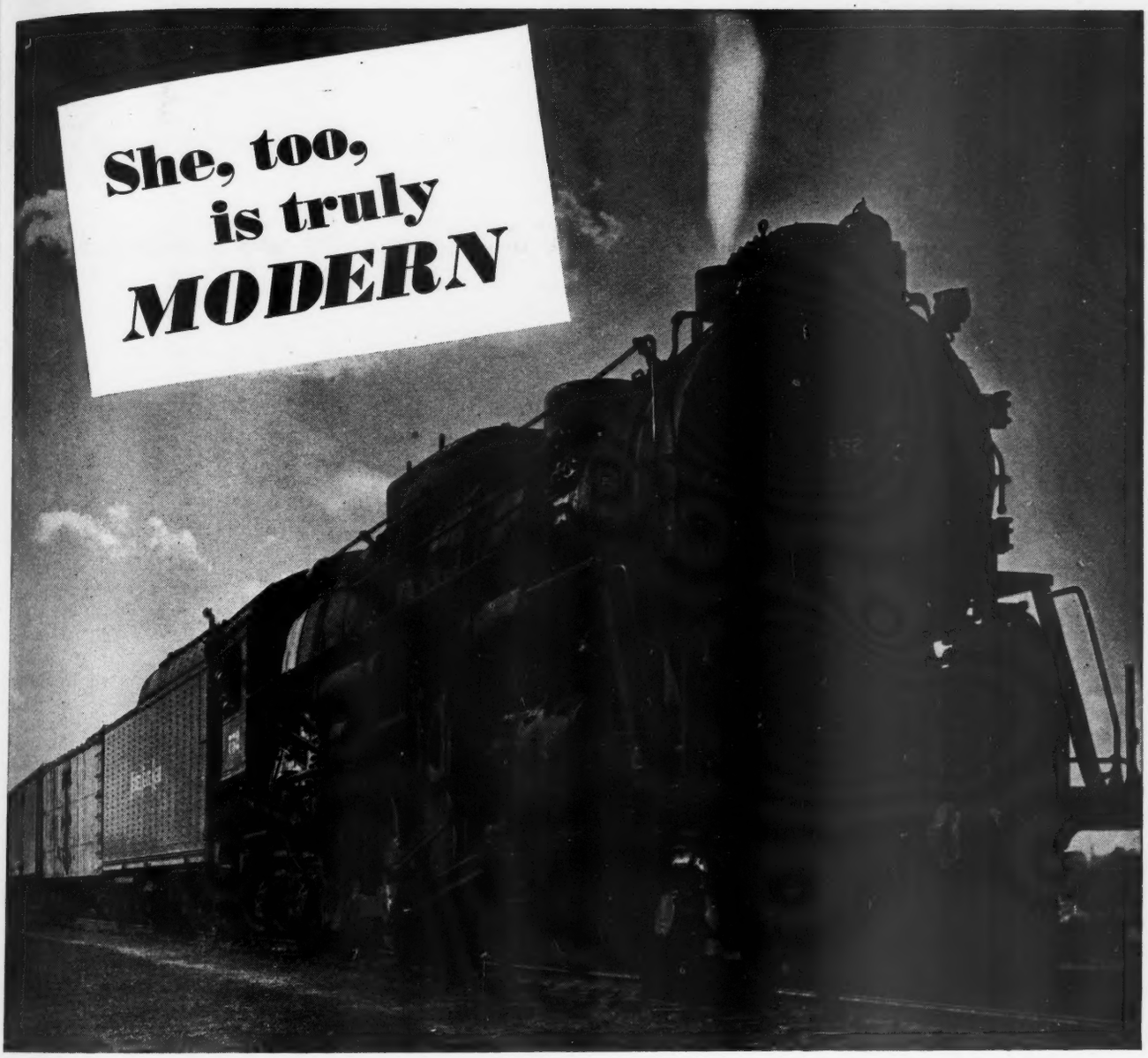


Willis T. Pierson

the Erie at Cleveland. A biography of Mr. Pierson appeared in the *Railway Age* of May 1, page 68.

R. G. Rydin, assistant vice-president, executive department, of the Atchison, Topeka & Santa Fe at Chicago, has been appointed vice-president, executive department, with headquarters remaining at that point. He succeeds **John H. Keefe,** who has retired after nearly 52 years of service with the

News Department continued on next left-hand page



She doesn't wear chrome trim, and her paint is black, but she, too, is truly modern. She was built for a job — a modern job — and she does it well.

With planned scheduling she can stay on the road 16 and 18 hours a day, 27 or 28 days a month. With proper servicing — and such servicing facilities save more than they cost — she can be turned around in an hour or two. With her modern design, based on progressive engineering, her maintenance costs are low. And with equal attention, she — the modern steam locomotive — will give you more train-miles, more ton-miles, more passenger-car miles per year for each dollar of investment than any other type of motive power.

There is a place for steam, and in this place the *modern* steam locomotive is doing an outstanding job. We are continuing to build such locomotives.

LIMA
HAMILTON
CORPORATION

DIVISIONS: *Lima, Ohio* — Lima Locomotive Works Division; Lima Shovel and Crane Division. *Hamilton, Ohio* — Hooven, Owens, Rentschler Co.; Niles Tool Works Co.

PRINCIPAL PRODUCTS: Locomotives; Cranes and shovels; Niles heavy machine tools; Hamilton diesel and steam engines; Hamilton heavy metal stamping presses; Hamilton-Kruse automatic can-making machinery; Special heavy machinery; Heavy iron castings; Weldments.

road. **E. S. Marsh,** executive assistant to the president, has been advanced to vice-president—finance, with headquarters as before at Chicago. A photo of Mr. Rydin and a sketch of his career appeared in the *Railway Age* of March 27, in connection with his promotion to assistant vice-president, executive department.

Mr. Marsh was born in Lynchburg, Va., on January 10, 1903, and entered railway service on April 1, 1918, as a file clerk of the Santa Fe at Clovis, N. M. He advanced through the positions of assistant timekeeper, head timekeeper, assistant division accountant and division accountant at Clo-

E. S. Marsh

vis, and on May 12, 1932, was made head clerk in the division accounts bureau at Amarillo, Tex. Five years later he was promoted to general clerk in the auditor of disbursement's office at Topeka, Kan., where, on January 1, 1940, he was appointed chief clerk and on July 1, 1940, was promoted to auditor of disbursements. On September 1, 1942, he was appointed chief clerk in the president's office at Chicago, and, on July 15, 1944, he was promoted to assistant to the president. Mr. Marsh became executive assistant to the president in October, 1945, and was serving in that capacity at the time of his new appointment.

Curtis M. Hutchins has been appointed president of the Bangor & Aroostook at Bangor, Me., succeeding **W. F. Cram,** who will remain as chairman.

B. W. Scandrett, vice-president of the Northern Pacific, with headquarters at St. Paul, Minn., has retired after a railroad career of 40 years. Mr. Scandrett was born on March 3, 1883, at Faribault, Minn., and received his higher education at the University of Minnesota's College of Civil Engineering and at Washburn College School of Law in Topeka, Kan. He entered railroad service as assistant general attorney with the Union Pacific at Topeka, Kan., in 1908, and was transferred to Omaha, Neb., in 1913. He joined the N. P. in 1917 as general attorney at St. Paul, advancing to assistant general solicitor in 1919 and to general solicitor in 1925. Mr. Scandrett has held the position of vice-president since 1928.

Herbert W. Ward, vice-president in charge of traffic of the Minneapolis & St. Louis, at Minneapolis, Minn., has resigned that position to become executive vice-president of the Illinois Terminal, with headquarters at St. Louis, Mo. He is succeeded by **Arthur C. Leake,** traffic manager at St. Louis.

Robert E. Stevenson, executive general agent of the Gulf, Mobile & Ohio, with headquarters at St. Louis, Mo., has been promoted to assistant vice-president at that point. Mr. Stevenson was born on July 5, 1905, at Grand Junction, Tenn., and was graduated from Washington & Lee University in 1927. Mr. Stevenson entered railroad service in 1928 as a clerk in the traffic department of the Gulf, Mobile & Northern (now G. M. & O.) at

Robert E. Stevenson

Mobile, Ala., and in 1939 he became secretary to general passenger agent there. From 1933 until 1940 he served as commercial agent at New Orleans, La., and in the latter year was promoted to district freight agent at Jackson, Tenn. He was further advanced to executive assistant there in 1943, to assistant to the president in 1945, and to executive general agent at St. Louis in January, 1947.

FINANCIAL, LEGAL and ACCOUNTING

William C. Carrick, general auditor of the Richmond, Fredericksburg & Potomac, with headquarters at Richmond, Va., has been elected to the newly-created position of comptroller. **Leland L. Miller,** assistant to general auditor, has been promoted to general auditor at Richmond. Mr. Carrick was born at Oregon, Ill., on March 17, 1883, and entered railroad service on September 18, 1901, with the R.F.&P. He became assistant chief clerk in May, 1910; special accountant in November, 1911; chief accountant in December, 1911; assistant auditor in December, 1913; corporate auditor in September, 1918, and general auditor on March 1, 1920. Mr. Carrick is a member and

William C. Carrick

past president (1934) of the Railway Accounting Officers Association.

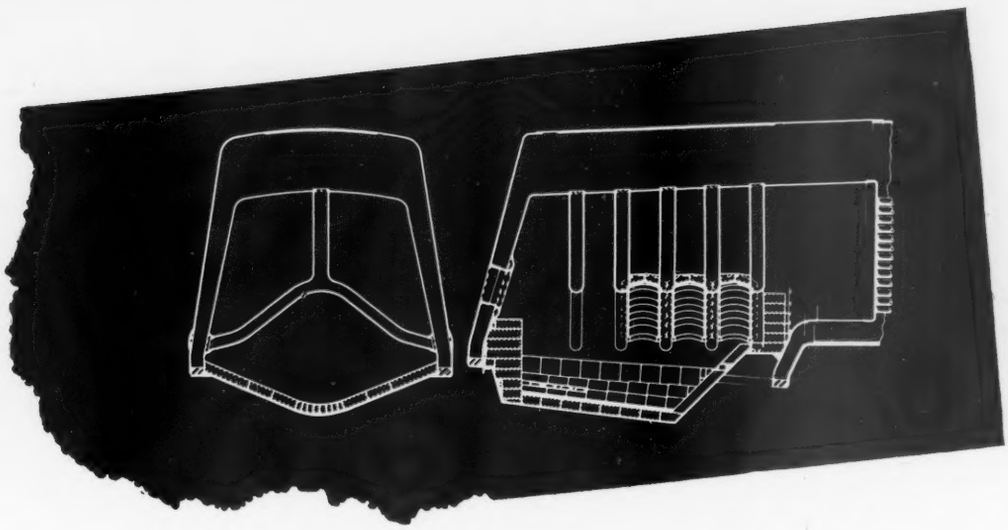
Mr. Miller was graduated from Davidson College in 1910 with the degree of A.B. and from the University of Virginia Law School in 1913 with the degree of LL.B. He practiced law in Richmond until 1916 when he was called with the National Guard into

Leland L. Miller

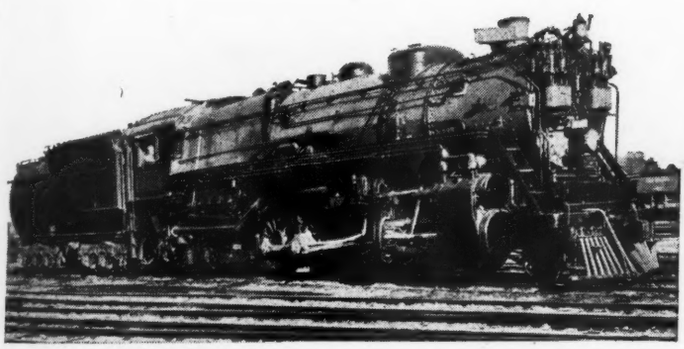
federal service. Resigning from the Army in February, 1920, at which time he was finance officer at Fort Oglethorpe, Ga., he went with A. M. Pullen & Co., certified public accountants in Richmond. Mr. Miller entered the service of the R.F.&P. in September, 1925, as special accountant, handling income and other taxes under the general auditor.

A. O. Gibson, assistant secretary and assistant treasurer of the Chicago, Rock Island & Pacific, at Chicago, has been elected secretary and assistant treasurer, succeeding **Ward Vanderpool,**

News Department continued on next left-hand page



Security Circulators being installed in 2-8-2 oil-burning locomotives



In modernizing a group of 2-8-2 oil-burning steam locomotives, each is being equipped with five Security Circulators, according to the arrangement shown in the sketch.

The installation of Security Circulators in a locomotive boiler provides additional heating area in the path of the hot gases. This enables the locomotive to get up steam more quickly, increases the water circulation from the side water-legs over the crown sheet, and aids in maintaining maximum boiler output.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

whose retirement was reported in *Railway Age* of March 6. **W. J. Camphausen,** assistant to treasurer, and **M. Z. Greenley,** assistant to secretary, have been elected assistant secretary and assistant treasurer, respectively. **L. G. Ames,** cashier, has been advanced to assistant treasurer.

OPERATING

R. D. Shelton, acting trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at Pueblo, Colo., has been appointed trainmaster at that point.

A. R. Wilson has been appointed superintendent of the Capreol division of the Canadian National at Capreol,

A. R. Wilson

Ont. A biography of Mr. Wilson was published in the *Railway Age* of May 1, page 880.

O. P. Dowling, Jr., chief dispatcher of the Atlantic Coast Line, has been appointed trainmaster of the Tampa district, with headquarters at Lakeland, Fla.

J. E. Gauthier, superintendent of the Campbellton division of the Canadian National, with headquarters at Campbellton, N. B., has been appointed general superintendent of the Quebec district at Quebec, Que., succeeding **Frank Griffin,** who has retired after many years of service.

William A. Nickel, assistant superintendent of transportation of the Central of New Jersey, has been appointed assistant to the chief operating officer, with headquarters as before at Jersey City, N. J.

George M. Leilich, trainmaster of the New York division of the Lehigh Valley, with headquarters at Jersey City, N. J., has been appointed superintendent of the Wyoming division at Wilkes-Barre, Pa., succeeding **Loyall P. Zeigler,** who has been transferred to the Buffalo division at Buffalo, N. Y. **Alfred P. Bauman,** road foreman of engines of the Wyoming division at Wilkes-Barre, has been appointed trainmaster at Jersey City, succeeding Mr. Leilich. **Robert F. Reany,** freight agent at New York, has been appointed supervisor of safety and freight claim prevention, a newly-created position, with headquarters at New York.

F. H. Woolfall has been appointed assistant to superintendent stations and motor service of the New York Central system, with headquarters at New York.

M. A. Chandler, district passenger agent of the Seaboard Air Line at Atlanta, Ga., has been transferred to New York, succeeding **T. W. Edwards, Jr.,** promoted.

William Taylor, general agent of the Canadian National at Antwerp, Belgium, has been appointed general freight agent at London, England, succeeding **George E. Cowie,** who has retired under the pension rules of the company.

Charles W. Baker, commercial agent of the St. Louis Southwestern at Fort Worth, Tex., has been appointed agent at Blytheville, Ark., succeeding **W. L. Roper,** who has been transferred to Chattanooga, Tenn. Mr. Roper succeeds **T. R. Lynch,** who has resigned.

Reginald Hayes has been appointed general superintendent of the Northern Ontario district of the Canadian Na-

Reginald Hayes

tional at North Bay, Ont. A biography of Mr. Hayes was published in the *Railway Age* of May 1, page 880.

H. E. Quarles and **F. H. Bowers,** assistant general freight agents of the Gulf, Mobile & Ohio, at Mobile, Ala., have been promoted to general freight agents at that point. **D. F. McCullough,** assistant general freight agent at New Orleans, La., has been advanced to general freight agent at that point.

F. A. Smith, assistant general freight agent, Central district, of the Southern Pacific, has been appointed assistant general freight agent on the staff of the freight traffic manager in charge of rates and divisions, with headquarters at San Francisco, Cal. Mr. Smith is succeeded by **Marshall Sayles,** formerly office manager in the freight traffic department, who in turn is succeeded by **W. P. Jennings,** formerly assistant industrial agent.

TRAFFIC

E. Smith Reed, assistant director of industrial development of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to director of industrial development for the railroad, with the same headquarters. **C. C. Luckel,** land and industrial commissioner of the Gulf Coast Lines and the International-Great Northern (subsidiaries of the M.P.), at Houston, Tex., has been appointed director of industrial development for those two companies, with headquarters remaining at Houston. Messrs. Reed and Luckel succeed to the duties of **James Gilmore Carlisle,** director of industrial development for the M.P. Lines, whose death was reported in *Railway Age* of April 17.

The Chicago, Milwaukee, St. Paul & Pacific has announced the following changes in its traffic department: **Harry L. Holmes,** general agent, freight department, at Seattle, Wash., transferred, at his own request, to Denver, Colo.; **H. E. Ridenour,** general agent at Denver, transferred to St. Louis, Mo.; and **J. E. Marshall,** general agent at St. Louis, appointed to succeed Mr. Holmes at Seattle.

PURCHASES and STORES

Granville E. Nickerson, chief clerk of the purchasing department of the Maine Central at Portland, Me., has been appointed purchasing agent, succeeding **Eugene Decker,** who has retired after nearly 55 years of service with that road. Mr. Decker was born at Clinton, Me., on December 18, 1876, and entered railroad service on June 26, 1893, as operator for the Maine Central at Thompson's Point, Me. On August 16, 1903, he became operator in the freight office at Portland and from March 1, 1913, to May, 1927, he served as chief clerk to purchasing agent. Mr. Decker became purchasing agent in May, 1927, which position he held until his retirement.

MECHANICAL

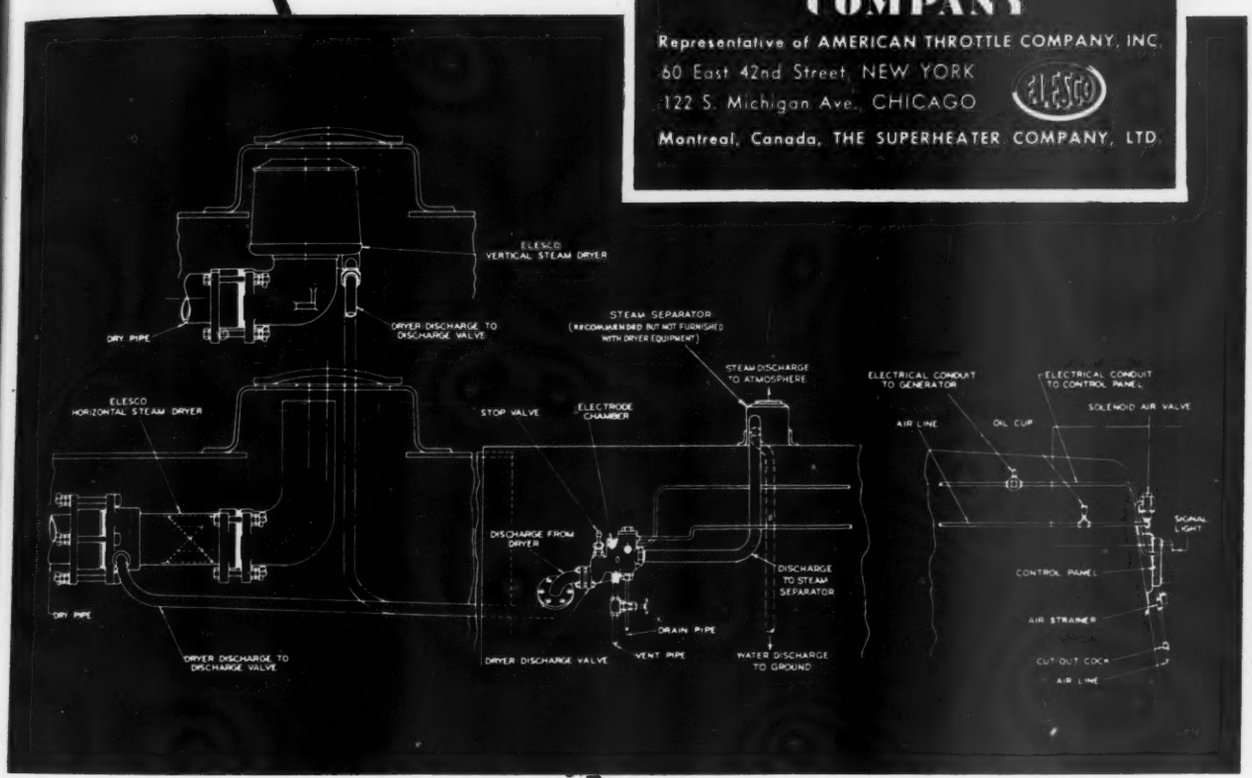
P. J. Danneberg, mechanical superintendent of the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., has been transferred to Topeka, Kan., succeeding **W. D. Hartley,** who in turn replaces Mr. Danneberg at La Junta.

W. B. Berry, superintendent of motive power of the St. Louis-San Francisco at Springfield, Mo., has been appointed to the newly created position of chief

News Department continued on next left-hand page

Carryover is Damaging

THE
SUPERHEATER
COMPANY
Representative of AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK
122 S. Michigan Ave., CHICAGO
Montreal, Canada, THE SUPERHEATER COMPANY, LTD.



Corrosion of superheater unit metal at elevated temperatures is due to a restriction in the steam flow.

Since such restriction is caused by deposits in the superheater unit tubing which result from carryover, it is the carryover which must be held responsible for the effect of superheater unit failures on the efficiency of locomotive operation.

An effective way to eliminate carryover is to apply the Elesco Steam Dryer System.

A-1908

Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Steam Dryers • Feedwater Heaters • Steam Generators • Oil Separators • American Throttles

mechanical officer at that point. He is succeeded by **W. H. Gimson,** assistant superintendent of motive power, who in turn is replaced by **F. G. Baker,** electrical engineer.

Andrew J. Ferentz, superintendent of the Buffalo division of the Lehigh Valley, with headquarters at Buffalo, N. Y., has been appointed assistant superintendent motive power-car, with headquarters at Sayre, Pa. **Daniel M. Anglemyer,** superintendent system shops and enginehouse at Sayre, has been promoted to master mechanic, Sayre shops.

ENGINEERING and SIGNALING

S. L. Mapes, assistant chief operating officer of the Jersey Central Lines, has been appointed chief engineer, with headquarters as before at Jersey City, N. J., succeeding **Albert M. Zabriskie,** who has retired from active duty after 44 years of service with the Jersey Central. Mr. Zabriskie will continue to serve in an engineering consulting capacity. **Harold R. Bausch,** assistant engineer, has been appointed principal assistant engineer in the chief engineer's department. Mr. Mapes was born at Port Jervis, N. Y., on June 15, 1890, and entered railroad service in 1911 as assistant foreman (student) in the track department of the Erie at Carlstadt, N. J. In August, 1911, Mr. Mapes went

S. L. Mapes

with the Central of New Jersey as rodman, becoming engineering clerk in the maintenance of way department in July, 1913, and chief material inspector in November, 1915. He was appointed assistant supervisor of track in June, 1918; assistant engineer in 1920; assistant engineer maintenance of way in 1923; engineer maintenance of way of the Central division in August, 1926; engineer maintenance of way of all divisions in July, 1932 and assistant chief operating officer on May 1, 1945.

Mr. Zabriskie was born at Nelson, N. H., on June 3, 1882, and engaged in municipal engineering at Plainfield, N. J., from 1899 to 1902. In January of the latter year he entered railroad service in the engineering department of the Lehigh Valley, remaining with that road until June, 1904, when he went with the Central of New Jersey as transitman. Mr. Zabriskie was ap-

Albert M. Zabriskie

pointed assistant engineer in November, 1906; engineer of design in January, 1917; principal assistant engineer in October, 1917; assistant chief engineer in July, 1938; and chief engineer on April 1, 1944.

F. S. Hutton, assistant division engineer of the Canadian National at London, Ont., has been appointed division engineer of the Hornepayne division at Hornepayne, Ont., succeeding **H. J. Fast,** who has been transferred to the Levis division at Levis, Que.

D. C. Houston, assistant electrical engineer of the St. Louis-San Francisco at Springfield, Mo., has been promoted to electrical engineer, succeeding **F. G. Baker,** who has been promoted to assistant superintendent of motive power.

SPECIAL

Dr. G. W. Benjamin has been appointed chief surgeon of the Western Maryland, with headquarters at Baltimore, Md., succeeding **Dr. F. C. Warring, Sr.,** deceased.

OBITUARY

Louis Warren Hill, Sr., who retired as as chairman of the Great Northern's board of directors in 1929, died on April 27 at St. Paul, Minn., following a long illness. Mr. Hill was the son of James J. Hill, pioneer executive of the G. N., whom he succeeded as board chairman. The younger Mr. Hill was born on May 19, 1872, at St. Paul, and received his higher education at Phillips Exeter Academy in Exeter, N. H., and at Yale University. He began his career with the G. N. as a billing clerk in 1893, and served in various capacities until 1898, when he became assistant to the president. He was advanced to vice-president in 1903, and, upon the retirement of his father as president in 1907, he assumed that position. He succeeded his father as board chairman in 1912, and held that post until 1929. He also served as president of the G. N. between the years 1914 and 1918. At the time of his death, Mr. Hill was a director of the road and a member of the executive committee of the board of directors.

William Hewer Rochester, whose death on April 25 was reported in the *Railway Age* of May 1, was born in Pendleton, S. C., on February 1, 1891, and received his higher education at Porter Military Academy in Charleston, S. C., and at Clemson College. Mr. Rochester began his railroad career as draftsman with the Nashville, Chattanooga & St. Louis in 1915, and in October of that year he went to work for the Santa Fe as a chainman at Arkansas City, Kan. He served in various engineering capacities until April, 1926, when he became assistant engineer in charge of

William Hewer Rochester

construction, with headquarters at Chicago. In May, 1930, he was appointed construction engineer, in which capacity he served until August, 1937, when he was promoted to district engineer at Amarillo, Tex. He held the latter post until June, 1943, at which time he became assistant chief engineer of the Santa Fe Coast Lines, with headquarters in Los Angeles, Cal. In October, 1946, Mr. Rochester was appointed acting chief engineer of the G. C. & S. F., with headquarters in Galveston. He had served as chief engineer since April 1, 1947.

George E. Lyman, assistant to director—purchases and stores of the Illinois Central, with headquarters at Chicago, died April 27 at the Illinois Central Hospital in Chicago.

They won't examine your brakes

But *they'll sure scan your* Schedule

Your average passenger never realizes that modern brakes make possible your fast schedules which attracted him. Nor does he reason that all the comforts you provide would be of little value without smooth brake action. Yes, he thrills to your streamlined equipment, but chills if you don't get him there on time!

"HSC" Electro-Pneumatic Brakes will help you meet schedule promises and passenger expectations. They are especially designed to meet present day needs. They stop trains smoothly and permit faster resumption of speed after slow-downs. They augment the comfort of modern rolling equipment.

Safeguard your investment in competitive advantage with "HSC" Electro-Pneumatic Brakes. They will contribute greatly to "on-time" performance. With their two companion devices, Speed Governor Control and "AP" Decelostat, you will have an unbeatable combination:

"HSC" Electro-Pneumatic Brakes . . . for brake flexibility to match modern train speeds, and unequalled smooth action.

Speed Governor Control . . . for regulating braking forces to wheel speeds.

"AP" Mechanical Decelostat . . . for wheel slip detection to keep the wheels rolling.

Brakes are Basic to Railroad Progress

Westinghouse Air Brake Co.

WILMERDING, PA.

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM RAILWAYS

Compiled from 127 monthly reports of revenues and expenses representing 131 Class I Steam Railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF FEBRUARY 1948 AND 1947

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,229	227,571	53,699	53,731	46,163	46,254	127,367	127,586
Revenues:								
Freight	$589,893,571	$518,686,722	$228,986,932	$195,549,017	$128,412,973	$114,752,573	$232,493,666	$208,385,132
Passenger	72,064,916	70,767,280	36,801,669	34,474,066	12,866,627	13,376,069	22,376,620	22,917,145
Mail	14,060,950	10,646,123	4,893,311	4,020,983	2,603,397	1,905,318	6,564,242	4,719,822
Express	9,333,746	7,259,177	2,203,253	1,937,003	2,008,740	1,572,883	5,121,753	3,749,291
All other operating revenues	30,537,458	28,880,954	13,443,979	12,699,340	5,481,419	4,982,167	11,612,060	10,929,447
Railway operating revenues	715,890,641	636,240,256	286,329,144	248,950,409	151,393,156	136,589,010	278,168,341	250,700,837
Expenses:								
Maintenance of way and structures	95,049,784	84,770,420	34,646,422	30,536,271	21,829,070	20,071,006	38,574,292	34,163,143
Depreciation	10,316,386	10,111,384	4,392,874	4,318,169	1,781,322	1,735,087	4,142,190	4,058,128
Retirements	454,468	514,449	98,246	105,840	81,780	227,967	274,436	180,642
Deferred maintenance	*405,843	*278,871	*6,272	*31,724	*175,551	*26,85	*224,020	*220,289
Amortization of defense projects	416,777	102,998	11,448	7,730	43,335	29,266	361,994	66,002
Equalization	5,148,462	4,980,693	1,872,595	2,474,685	2,041,477	1,266,886	1,234,390	1,239,122
All other	79,119,534	69,339,767	28,277,351	23,661,571	18,056,701	16,838,658	32,785,302	28,839,538
Maintenance of equipment	134,319,948	118,787,270	57,723,859	51,181,789	27,245,276	24,266,475	49,350,813	43,339,006
Depreciation	19,862,613	18,711,149	7,705,752	7,467,514	4,456,655	4,108,285	7,700,206	7,135,350
Retirements	*259,988	*26,358	*6,895	*5,681	*16,967	*8,760	*236,126	*11,917
Deferred maintenance and major repairs	*417,264	*294,818	.....	*449	*91,725	*75,694	*325,539	*218,675
Amortization of defense projects	1,265,500	1,251,386	451,047	469,653	238,925	248,563	578,528	533,170
Equalization	468,905	361,666	109,699	70,498	321,795	261,652	37,411	29,516
All other	113,397,182	98,784,245	49,464,256	43,180,254	22,336,593	19,732,429	41,596,333	35,871,562
Traffic	15,340,690	13,549,979	5,150,569	4,768,174	3,519,500	2,921,104	6,670,621	5,860,701
Transportation—Rail line	309,584,999	263,794,588	133,938,657	116,774,820	58,889,648	50,511,685	116,756,694	96,508,083
Miscellaneous operations	10,645,434	9,740,182	4,018,398	3,596,209	1,819,404	1,607,037	4,807,632	4,536,936
General	21,414,827	18,889,60	8,145,350	7,268,903	4,551,518	4,089,595	8,717,959	7,531,107
Railway operating expenses	586,355,682	509,532,044	243,623,255	214,126,166	117,854,416	103,466,902	224,878,011	191,938,976
Net revenue from railway operations	129,534,959	126,708,212	42,705,889	34,824,243	33,538,740	33,122,108	53,290,330	58,761,861
Railway tax accruals	77,254,849	69,882,047	28,587,201	23,402,336	18,064,996	17,010,314	30,602,652	29,469,397
Pay-roll taxes	29,789,809	26,872,396	12,610,578	11,341,651	5,883,897	5,327,372	11,295,334	10,203,373
Federal income taxes	22,323,964	20,787,689	6,198,509	3,495,898	6,903,601	6,881,364	9,221,854	10,410,427
All other taxes	25,141,076	22,221,962	9,778,114	8,564,787	5,277,498	4,801,578	10,085,464	8,855,597
Railway operating income	52,280,110	56,826,165	14,118,688	11,421,907	15,473,744	16,111,794	22,687,678	29,292,464
Equipment rents—Dr. balance	9,458,680	9,460,869	5,382,244	4,931,453	*1,409,867	*476,960	5,486,303	5,006,376
Joint facility rent—Dr. balance	3,396,135	3,544,366	1,427,603	1,600,503	523,574	583,458	1,445,558	1,360,405
Net railway operating income	39,425,295	43,820,930	7,309,441	4,889,951	16,360,037	16,005,296	15,755,817	22,925,683
Ratio of expenses to revenues (per cent)	81.9	80.1	85.1	86.0	77.8	75.8	80.8	76.6

Item	United States		Eastern District		Southern District		Western District	
	1948	1947	1948	1947	1948	1947	1948	1947
Miles of road operated at close of month	227,223	227,572	53,700	53,732	46,156	46,254	127,367	127,586
Revenues:								
Freight	$1,203,254,984	$1,069,818,636	$459,144,296	$405,317,555	$263,460,409	$238,028,526	$480,650,279	$426,472,555
Passenger	152,961,841	153,218,524	78,395,224	75,004,007	26,593,394	28,490,679	47,973,223	49,723,838
Mail	29,198,597	21,764,919	10,339,706	7,937,799	5,318,026	3,940,437	13,540,865	9,886,683
Express	17,217,660	16,239,811	3,609,862	4,531,999	3,817,082	3,149,663	9,790,716	8,558,149
All other operating revenues	63,992,347	60,828,299	28,230,609	27,232,471	11,294,787	10,300,208	24,466,951	23,295,620
Railway operating revenues	1,466,625,429	1,321,870,189	579,719,697	520,023,831	310,483,698	283,909,513	576,422,034	517,936,845
Expenses:								
Maintenance of way and structures	197,486,709	171,524,006	73,485,468	61,349,165	44,339,553	40,533,318	79,661,688	69,650,523
Depreciation	20,596,410	20,215,751	8,754,739	8,632,589	3,565,656	3,467,443	8,276,015	8,115,719
Retirements	943,221	860,754	211,514	255,206	132,660	299,722	599,047	305,826
Deferred maintenance	*737,727	*486,118	*16,403	*70,647	*335,126	*49,678	*386,198	*365,793
Amortization of defense projects	559,067	210,076	24,743	19,430	86,721	57,967	447,603	132,679
Equalization	10,446,492	9,608,355	3,858,395	4,837,167	3,866,425	2,310,269	2,721,672	2,460,919
All other	165,679,246	141,115,188	60,652,480	47,666,420	37,023,217	34,447,595	68,003,549	59,001,173
Maintenance of equipment	274,808,059	244,994,727	117,369,760	105,730,332	55,699,473	50,237,259	101,738,826	89,027,136
Depreciation	39,694,680	37,493,017	15,535,936	15,049,090	8,882,601	8,196,297	15,276,143	14,247,630
Retirements	*327,969	*45,596	*7,001	*7,416	*71,318	*12,292	*249,650	*25,888
Deferred maintenance and major repairs	*829,536	*531,663	.....	*2,258	*188,256	*148,396	*641,280	*381,009
Amortization of defense projects	2,494,810	2,510,316	903,476	946,061	477,589	499,870	1,113,745	1,064,385
Equalization	964,452	808,528	216,292	126,678	617,432	625,388	130,728	56,462
All other	232,811,622	204,760,125	100,721,057	89,618,177	45,981,425	41,076,392	86,109,140	74,065,556
Traffic	30,818,418	27,279,515	10,240,816	9,497,466	7,021,836	5,878,866	13,555,766	11,903,183
Transportation—Rail line	632,826,289	545,411,274	271,811,028	239,621,000	120,957,901	103,948,946	240,057,360	201,841,328
Miscellaneous operations	22,319,259	20,684,552	8,507,162	7,681,602	3,743,806	3,301,054	10,068,291	9,701,896
General	43,952,466	38,758,834	16,864,145	14,957,532	9,438,194	8,342,084	17,650,127	15,459,218
Railway operating expenses	1,202,211,200	1,048,652,908	498,278,379	438,828,097	241,200,763	212,241,527	462,732,058	397,583,284
Net revenue from railway operations	264,414,229	273,217,281	81,441,318	81,195,734	69,282,935	71,667,986	113,689,976	120,353,561
Railway tax accruals	155,910,001	145,013,521	55,147,258	48,948,781	36,893,339	36,130,373	63,869,404	59,934,367
Pay-roll taxes	60,784,819	55,362,301	25,555,856	23,230,744	12,035,051	10,951,948	23,193,912	21,179,609
Federal income taxes	46,065,628	44,732,221	11,510,246	8,290,957	14,345,638	15,589,414	20,209,744	20,851,850
All other taxes	49,059,554	44,918,999	18,081,156	17,427,080	10,512,650	9,589,011	20,465,748	17,902,908
Railway operating income	108,504,228	128,203,760	26,294,060	32,246,953	32,389,596	35,537,613	49,820,572	60,419,194
Equipment rents—Dr. balance	20,433,925	18,875,315	10,339,813	9,517,981	*2,463,477	*540,852	12,557,589	9,898,186
Joint facility rent—Dr. balance	6,998,554	7,008,654	3,266,276	3,301,481	1,047,801	1,192,927	2,684,477	2,514,246
Net railway operating income	81,071,749	102,319,791	12,687,971	19,427,491	33,805,272	34,885,538	34,578,506	48,006,762
Ratio of expenses to revenues (per cent)	82.0	79.3	86.0	84.4	77.7	74.8	80.3	76.8

* Decrease, deficit, or other reverse item.

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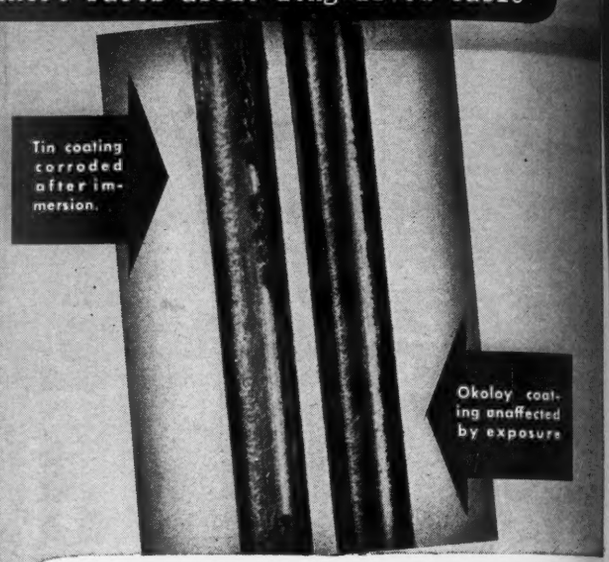

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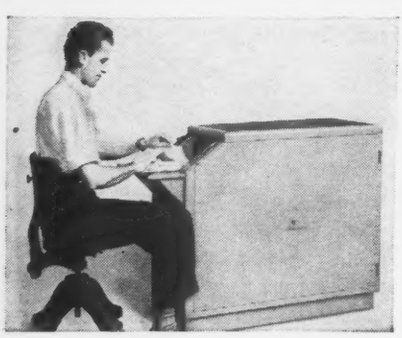

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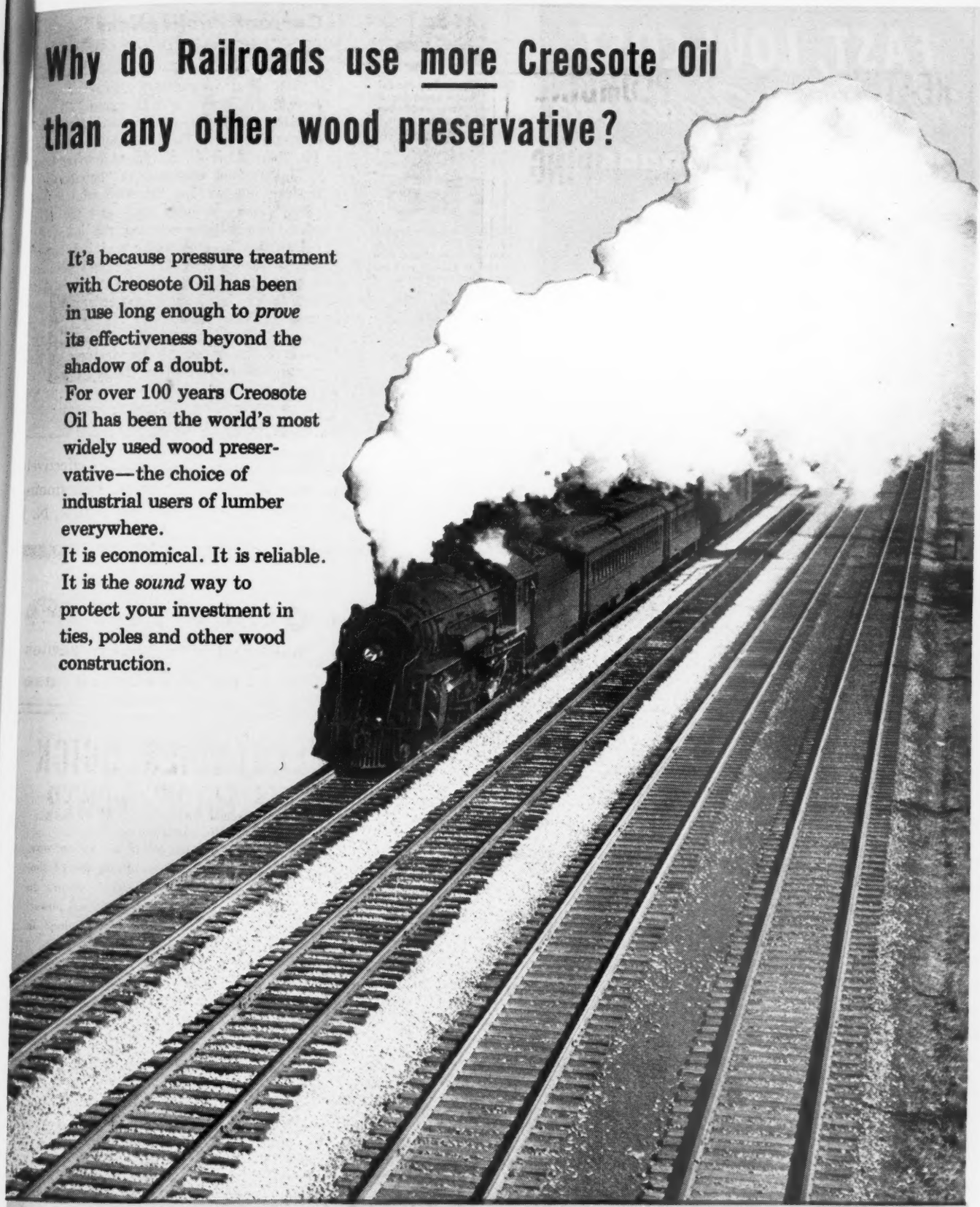

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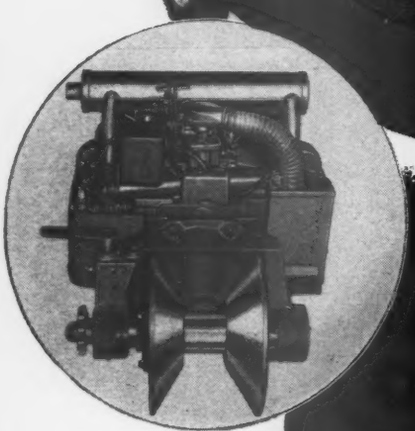

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Current Publications

BOOKS

Tool Steel Simplified, by Frank R. Palmer and George V. Luerssen. Revised edition, 564 pages, illustrations. Published by the Carpenter Steel Company, Reading, Pa. Price $2 in U. S. A., $2.50 elsewhere.

This revised edition of a "handbook of modern practice for the man who makes tools," seeks to give tool and die steel users information covering the latest developments in toolmaking and heat treating. Skilled toolmakers will find new information on air-hardening steels, a new approach to hardenability (hardening penetration), new chapter on high speed and hot work steels, a useful alphabetical Tool Steel Selector, etc. Younger men in the trade will find that the book "begins at the beginning" and takes them along to an understanding of tooling operations.

Regulation of Transportation; Practice and Procedure Before the Interstate Commerce Commission, by Joseph H. Tedrow. Second Edition, 222 pages. Published by Wm. C. Brown Company, Dubuque, Ia. Price $6.

This book is a course of study and is especially written for the rate man or traffic manager who desires to learn more about his business and become acquainted with the subject of regulation, and the rights of shippers and carriers. It discusses the origin, purpose and history of the Interstate Commerce Act, the present act, bills of lading, practice and procedure before the commission, and a large number of court cases. Seven quizzes are included so that the student or reader can test his knowledge of the subjects discussed. There is also a table of cases cited.

When Does Title Pass; as Between Shipper and Consignee, and Who Bears the Risk of Loss or Damage in Transit, by Thomas G. Bugan. 118 pages. Published by Thomas G. Bugan, 1 N. LaSalle st., Chicago 2. Price, $2.50.

Among the subjects discussed are the following: shipments f.o.b. point of origin; f.o.b. destination; order notify bills of lading; prepayment of freight charges; deduction of freight charges; use of government bills of lading; responsibility for delayed delivery; right to reconsign; stoppage in transit; and compliance with routing and shipping instructions. The uniform sales act which generally governs when the title in goods passes is thoroughly discussed and 94 court decisions construing the act are cited.

TRADE PUBLICATIONS

Kinnear Rolling Doors. Bulletin No. 49, 28 pages, printed in color. Published by the Kinnear Manufacturing Company, Columbus 16, Ohio.

This bulletin, describing the complete line of rolling doors manufactured by the company, is divided into six sections covering service-type doors, fire doors and shutters, Rol-Top doors, hanger doors, steel rolling grills, and special doors. In addition to photographs of installations, each section contains specifications and drawings.